

**RAJ KUMARI AMRIT KAUR COLLEGE OF NURSING
MINISTRY OF HEALTH & FAMILY WELFARE
Govt. Of India
Lajpat Nagar, New Delhi -110024**

TENDER

FOR

**Construction of Academic block, Girls hostel, Auditorium,
External services & Basement Parking” at RAK College of
Nursing, Lajpat Nagar, New Delhi**

VOLUME – V

BILL OF QUANTITIES

**Civil Works & services
Electrical works
HVAC Works**

JANUARY’ 2012



(Consultants & Engineers for Mega Hospitals & Laboratories)
E - 6 (A), Sector - I, NOIDA (U.P.) - 201 301 (INDIA)

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Tender No RAK/PG-1/152/2012

BILL OF QUANTITY

CIVIL WORKS AND SERVICES

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.

ABSTRACT OF COST(Civil Work)

S.No	DESCRIPTION OF WORK	AMOUNT
1	EARTHWORK	Rs
2	CONCRTE WORK	Rs
3	RCC WORK	Rs
4	BRICK WORK	Rs
5	DOORS & WINDOWS	Rs
6	STEEL WORK	Rs
7	FLOORING	Rs
8	CEILING & ROOFING	Rs
9	FINISHING	Rs
10	MISCELLANEOUS	Rs
11	Road Work and Development	Rs
	TOTAL	Rs
1	Credit for demolition and disposal by sale	Rs
	Net Amount (Part A- Part B)	Rs

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
1.00	EARTH WORK					
1.01	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30cm in depth, 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50m and lift up to 1.5m, disposed earth to be levelled and neatly dressed.					
a)	All kinds of soil	60156.00	cum			
b)	Ordinary rock	40.00	cum			
c)	Hard rock (blasting prohibited)	40.00	cum			
1.02	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.					
a)	All kinds of soil.	2304.00	cum			

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1	2	3	4	5	6	7
1.03	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	17291.00	cum			
1.04	Extra for every additional lift of 1.5 m or part there					
a)	All kinds of soil.					
i)	1.5 to 3.0m	10370.49				
ii)	3.0 to 4.5m	8107.34				
iii)	4.5 to 6.0m	7350.00				
iv)	6.0 to 7.5m	7350.00				
v)	7.5 to 9.0 m	7350.00				
vi)	9.0 to 10.5 m	3675.00				
1.05	Supplying and filling in plinth with river sand under floors including, watering, ramming consolidating and dressing complete.	249.00	cum			
1.06	Extra for disposal of excavated earth for additional lead beyond 50m or part thereof upto 9 such additional leads					
a)	All kinds of soil	50575.00	cum			
Total						

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
2.00	Concrete Work					
2.01	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:					
a)	1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	37.00	cum			
b)	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).	1030.00	cum			
c)	1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size)	395.00	cum			
2.02	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets etc. up to floor five level, excluding the cost of centering, shuttering and finishing:					
a)	1:2:4 (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	14.00	cum			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
2.03	Providing and laying damp-proof course 40mm thick with cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 12.5mm nominal size).	327.00	sqm			
2.04	Extra for providing and mixing water proofing material in CC/RCC work @ 1 kg per 50kg of cement.	40086.00	per 50 kg cement			
2.05	Applying a coat of residual petroleum bitumen of penetration 80/100 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	327.00	sqm			
2.06	Providing and laying in position cement concrete 1:5:10 (1 Cement : 5 fine sand : 10 broken brick bats 40 mm nominal size) including consolidation etc all complete.	206.00	Cum			
	Total					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
3.00	REINFORCED CEMENT CONCRETE					
3.01	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete work including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement. including Admixtures in recommended proportions as per IS 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. M-25 grade reinforced cement concrete by using 380 kg. of cement per cum of concrete. All work up to floor V level.	13854.65	cum			

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1	2	3	4	5	6	7
3.02	Providing and laying in position ready mixed concrete manufactured in fully automatic batching plant and transported to site of work in transit mixer for a lead up to 10kms having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work including pumping of R.M.C. from transit mixer to site of laying , excluding the cost of centering, shuttering finishing and reinforcement including cost of admixtures in recommended proportions as per IS : 9103 to accelerate/ retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer - in - charge. M-25 grade Reinforced cement concrete by using 380kg of cement per cum of concrete. All works up to floor V level.	1086.35	Cum			
3.03	Add or deduct for providing richer or leaner mixes respectively at all floor levels.					
i)	Providing M-30 grade concrete by using 400kg of cement per cum of concrete instead of M-25 grade B.M.C/ R.M.C..	7067.00	cum			
ii)	Providing M-35 grade concrete by using 420kg of cement per cum of concrete instead of M-25 grade B.M.C./ R.M.C...	556.00	cum			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
3.04	Centering and shuttering including strutting, propping etc. and removal of form for:					
a)	Foundations, footings, bases of columns, etc. for mass concrete.	1000.00	sqm			
b)	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	6777.00	sqm			
c)	Suspended floors, roofs, landings, balconies and access platform.	19056.00	sqm			
d)	Shelves (Cast in situ)	431.00	sqm			
e)	lintels, beams, plinth beams. girders. bressumers and cantilevers.	15285.00	sqm			
f)	Columns, Pillars, Piers, Abutments, Posts and Struts.	11774.00	sqm			
g)	Stairs, (excluding landings) except spiral-staircases	1428.00	sqm			
h)	Small lintels not exceeding 1.5m clear span, moulding as in cornices, window sills, string courses, bands, copings, bed plates, anchor blocks and the like.	159.00	sqm			
i)	Edges of slabs and breaks in floors and walls.					
i)	Under 20 cm wide	610.00	metre			
ii)	Above 20 cm wide	130.00	sqm			
j)	Extra for shuttering in circular work for					
i)	columns	45.00	Sqm			
ii)	Beams	90.00	sqm			

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1	2	3	4	5	6	7
j)	Extra for making the RCC surface of Suspended floors, roofs, landings, balconies, Beams & Retaining Walls smooth (to keep the surface exposed) using water proof ply 12mm thick.	15823.00	sqm			
3.05	Extra for additional height in centering, shuttering wherever required with adequate bracing, propping etc. including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured)					
a)	Suspended floors, <i>roofs</i> , landings, beams and balconies (Plan area to be measured).	15198.00	sqm			
3.06	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete (At all levels).					
a)	Thermo-Mechanically Treated bars	2079330.00	Kg			
3.07	Deduct for using less cement than the quantity as provided in the item of batch mix concrete/RMC as arrived as per mix design.	250.00	Qtl			
3.08	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof.	1259.00	Cum			
Total						

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1	2	3	4	5	6	7
4.00	BRICK WORK					
4.01	Brick work with F.P.S. bricks of class designation 75 in foundation and plinth in:					
a)	Cement mortar 1:6 (1 cement: 6 coarse sand)	955.00	cum			
4.02	Brick work with F.P.S. bricks of class designation 75 in superstructure above plinth level up to floor V level in all shapes and sizes in :					
a)	Cement mortar 1:6 (1 cement: 6 coarse sand)	516.60	cum			
4.03	Half brick masonry with F.P.S. brick of class designation 75 in foundations and plinth in.					
a)	cement mortar 1:4 (1 cement: 4 coarse sand)	178.00	sqm			
4.04	Half brick masonry with F.P.S. bricks of class designation 75 in superstructure above plinth level up to floor V level.					
a)	Cement mortar 1:4 (1 cement :4 coarse sand)	5363.50	sqm			
4.05	Extra for providing and placing in position 2 Nos. 6mm dia. M.S. bars at every third course of half brick masonry (with F.P.S. bricks).	5541.50	sqm			

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1	2	3	4	5	6	7
4.06	Providing and laying autoclaved aerated cement blocks masonry with 100mm thick AAC blocks in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand) The rate includes providing and placing in position 2 Nos. 6 mm dia M.S. bars at every third course of masonry work.	530.95	Cum			
4.07	Brick work with clay flyash F.P.S. brick of class designation 75 in superstructure above plinth level up to floor five level in :					
a)	Cement mortar 1:6 (1 cement :6 coarse sand).	3029.40	Cum			
4.08	Extra for exposed brick work/ clay flyash brick work in superstructure above floor five level, for each four floors or part thereof.	1108.80	Cum			
4.09	Extra for brick work in superstructure above floor V level for each four floors or part thereof by mechanical means by lifting material using mobile crane.	123.20	Cum			
4.10	Extra for half brick masonry in superstructure, above floor V level for every four floors or part thereof by mechanical means by lifting material using mobile crane.	3866.00	Sqm			

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1	2	3	4	5	6	7
4.11	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	779.00	Metre			
4.12	Providing and fixing partition upto ceiling height consisting of G.I. frame and required board including providing and fixing of frame work made of special section power pressed/ roll form G.I. sheet with zinc coating of grade 175, consisting of floor and ceiling channel 50mm wide having equal flanges of 32mm and 0.55 mm thick fixed to the floor and ceiling at the spacing of 610mm centre to centre with dash fastener of 12.5mm dia meter 40mm length and the studs 48mm wide having one flange of 34mm and other flange 36mm and 0.55 mm thick fixed vertically within flanges of floor and ceiling channel and placed at a spacing of 610mm centre to centre by 6mm dia bolts and nuts at both ends of partition fixed flush to wall with rawl plugs at spacing of 450mm centre to centre and fixing of boards to either side of frame work by 20mm long drive wall screws on studs, floor and ceiling channels at the spacing of 300mm centre to centre,					

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1	2	3	4	5	6	7
	including jointing and finishing to a flush finish with recommended jointing compound, jointing tape, joint finisher and two coats of primer suitable for board as per manufacture's specification and direction of Engineer in Charge all complete.					
a)	75mm overall thickness partition with 12.5mm thick double skin plain Gypsum board conforming to IS: 2095: part I	198.00	Sqm			
	Total					

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1	2	3	4	5	6	7
5.00	DOORS, WINDOWS AND FITTINGS					
5.01	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS : 1285, fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required EPDM rubber/neoprene felt etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing and paneling to be paid for separately) :					
5.01.1	For fixed portion					
a)	Powder coated aluminium (minimum thickness of powder coating 50 micron)	23345.00	kg			

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1	2	3	4	5	6	7
5.01.2	For shutters of doors, windows & ventilators including providing and fixing hinges/pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately).					
a)	Powder coated aluminium (minimum thickness of powder coating 50 micron)	9385.00	kg			
5.02	Providing and fixing anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868. Minimum anodic coating of grade AC 15) sub frame work for windows and ventilators a with extruded built up standard tubular sections of approved make conforming to IS: 733 and IS : 1285 fixed with rawl plugs and stainless steel screws etc.	5403.00	kg			

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1	2	3	4	5	6	7
5.03	Providing and fixing pressed steel door frames confirming to IS: 4351 manufactured from commercial mild steel sheet of 1.25 mm thickness including hinges jamb, lock jamb, bead and if required angle threshold of mild steel angle of section 50x25mm, or base ties of 1.25mm pressed mild steel welded or rigidly fixed together by mechanical means, adjustable lugs with split end tail to each jamb including steel butt hinges 2.5mm thick with mortar guards, lock strike-plate and shock absorbers as specified and applying a coat of approved steel primer after pre-treatment of the surface as directed by Engineer-in-charge:					
a)	Profile C	100.00	metre			
5.04	Providing and fixing 12mm thick prelaminated particle board flat pressed three layer or graded wood particle board conforming to IS: 12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge.					
a)	Pre-laminated particle board with decorative lamination on both sides.	30.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
5.05	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge. (Cost of aluminium snap beading shall be paid in basic item) :					
a)	With float glass panes of 5.50 mm thickness	1403.00	sqm			
5.06	Providing and fixing double action hydraulic floor spring of approved brand and manufacture IS : 6315 marked, for doors including cost of cutting floors as required, embedding in floors and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.					
a)	With brass cover plate	8.00	each			
5.07	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.					
a)	Upto 5mm depth and 5 mm width	1424.00	Metre			

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1	2	3	4	5	6	7
5.08	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side having 12 mm air gap including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	100.00	Sqm			
5.09	Providing and fixing powder coated aluminium grills(minimum thickness of powder coating 50 micron) of required size and approved pattern and quality made out with special extruded sections fixed with suitable means as approved and as directed by Engineer in Charge.	4668.00	kg			
5.10	Providing and fixing ISI marked flush door shutters conforming to IS: 2202 (Part I) non-decorative type, core of block board construction with frame of 1st class hard wood and well matched commercial 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters :					
a)	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	1445.00	sqm			

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1	2	3	4	5	6	7
5.11	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of shutters (over all area of door shutter to be measured) over item no. 5.09 above.	1445.00	sqm			
5.12	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured) :					
a)	Rectangular or square.	723.00	sqm			
5.13	Extra for providing frosted glass panes 4 mm thick instead of ordinary float glass panes 4 mm thick in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	31.00	sqm			
5.14	Providing glass panes, with wooden fillets wherever necessary.					
a)	Float glass panes of thickness 4 mm	31.00	Sqm			

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1	2	3	4	5	6	7
5.15	Extra for Providing etching on glass panes in doors, windows shutters, partition etc in desired pattern complete as per drawing and as directed.(Area of etching shall be measured for payment)	26.00	sqm			
5.16	Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt / suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S including cost of adhesive of approved quality					
a)	1.0 mm thick.	2890.00	sqm			

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1	2	3	4	5	6	7
5.17	Providing and installation of fully insulated wooden fire rated shutter of 120min. fire rating conforming to BS: 476 part 22 and IS:3614 Part II as per the prototype tested and certified by CBRI Roorkee, of 55mm thickness, comprising of 75mm x 49mm hardwood internal timber frame work, with infill of 96 kg/m ³ , ceramic fiber blankets, coated with VIPER FR or equivalent intumescent coating on both sides for insulation. The coated insulation shall be sandwiched between 12mm thick, Non combustible Boards (Calcium Silicate) on both sides (edge to edge on internal Hardwood frame) and cladded with 3mm thick commercial ply of approved quality & 1mm thick laminate of approved brand and manufacture on both sides, with 55mm x 14mm 2nd class teak wood lipping all round the shutter.					

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1	2	3	4	5	6	7
	The shutter is suitable for mounted on the door frame, as per the item given below.. Both frame and shutter shall be fitted with fire & smoke intumescent seal of Viper or equivalent make of size 20 x 4mm on all the three sides except bottom. The pasting of the ply/veneer/laminate should be done using automatic machine and should be free from any nails or perforations. The board shall be Resistant to vermin, mould growth, minor impact, abrasion and short term water attack. The shutter shall be fixed with the frame with the help of SS 304 grade ball bearing hinges of size 100x76x2mm with necessary screws and making cut out for vision panel. Provisions/reinforcement for fixing all fixtures shall be built in on the door prior to the supply.					
a)	Single/Double Shutter	182.00	sqm			

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1	2	3	4	5	6	7
5.18	Providing and fixing door frames as per BS: 476 part 22, IS:3614 Part II as per the prototype certified by CBRI Roorkee made out of 2nd class Teak Wood (Ivory Coast)frame of section 140x65mm for fire resistant doors of 120 minutes fire rating, with heat activated intumescent fire seal strips of size 20 x 4 mm(for smoke sealing) provided in grooves on all three sides of the frame with one coat of approved brand of fire retardant primer including two coats of fire retardant paint FR 881or equivalent un thinned on cleared hard wood surface of door frames (@3.5 sq.m. per litre per coat) including preperation of base surface as per recommendations of manufacturer to make the surface fire retardant, including fixing the frame with 8 nos. 100 mm long, 10 mm dia metal dash fastners complete as per directions of the Engineer in charge NOTE:- cost of fire seal strips, dash fastners are included in the item. Nothing extra shall be paid if size of any component of material exceeds the limit mentioned in the item.	328.00	Metre			
5.19	Providing and fixing UL listed door Co-ordinator for coordination of double leaf doors, of approved brand and manufacture with minimum one year warrantee.	52.00	Each			

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1	2	3	4	5	6	7
5.20	Providing & fixing of Fire-stop Fire sealing System Board Type(barriers) of approved make for sealing of floors, wall openings under control panels for the purpose of compartmentation.The FPSS consists of 100mm thick mineral wool insulation pad having density of 48 kg/m ³ coated with FR in tumescent compound encased with 10 mm thick calcium silicate board of approved Make, sealed with intumescent Fire Seal Putty of approved quality and Make. The system is coated and fixed with openings with the help of slotted angles of size 40x40mm of 16 SWG thickness, nutbolts of size 40 x8mm Dia. The FPSS system all provide 2 hours fire rating as per IS 12458-1989.After insulation of this system it will be painted with Fire Retardant Paint of approved Make. The system has to be tested at CBRI, Roorkee or approved laboratory for 2 hrs. Fire rating as per the following specifications. 1. BS: 476 Part 8. 2. UL: 1479 . ISO:834 4. ASTM E 814 5. ASTM E 119 6. IS: 12458-1989	21.00	sqm			

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1	2	3	4	5	6	7
5.21	Providing and fixing 6 mm thick pyroswiss extra or equivalent fire rated clear toughened glass of approved make, of 120 minutes fire rating to be fixed in vision panel including cost of fire ceramic tape and moulding/beading etc all complete	6.00	sqm			
5.22	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5cm long wire springs grade No.2 and M.S. top cover of required thickness for rolling shutters.					
	80x1.25mm M.S. laths with 1.25 mm thick top cover.	54.00	sqm			
5.23	Providing and fixing ball bearing for rolling shutters.	18.00	No.			
5.24	Extra for providing mechanical device chain and crank operation for operating rolling shutters.					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	Exceeding 10.00 sqm and upto 16.80 sqm in the area.	6.00	sqm			
5.25	Extra for providing grilled rolling shutters manufactured out of 8 mm dia. M.S. bar instead of laths as per design approved by Engineer-in-charge.(area of grill to be measured).	22.00	sqm			
	ALUMINIUM FITTINGS					
5.26	Providing and fixing IS : 3564 marked aluminium extruded section body tubular type universal hydraulic door closer with double speed adjustment with necessary accessories and screws etc. complete.	25.00	each			
5.27	Providing and fixing IS : 3564 marked Aluminium die cast body tubular type universal hydraulic door closer with necessary accessories and screws etc. complete.	636.00	each			
5.28	Providing and fixing aluminium sliding door bolts ISI marked anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade with nuts and screws etc. complete:					
a)	300x16 mm	8.00	each			
b)	250x16 mm	8.00	each			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
5.29	Providing and fixing aluminium tower bolts ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with necessary screws etc. complete:					
a)	250x10 mm	747.00	each			
b)	150x10 mm	2502.00	each			
5.30	Providing and fixing aluminium handles ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with necessary screws etc. complete :					
a)	125 mm	1505.00	each			
b)	100 mm	40.00	each			
5.31	Providing and fixing aluminium hanging floor door stopper ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade with necessary screws etc. complete.					
a)	Twin rubber stopper	733.00	each			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
5.32	Providing and fixing bright finished brass 100 mm mortice latch and lock ISI marked with six levers and a pair of anodised (anodic coating not less than grade AC 10 as per IS : 1868) aluminium lever handles with necessary screws etc. complete (Best make of approved quality).	661.00	each			
5.33	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineer-in-charge complete.					
a)	255 X 19 mm	1783.00	each			
5.34	Providing and fixing aluminium tubular handle bar 32 mm outer dia, 3.0 mm thick & 2100 mm long with SS screws etc .complete as per direction of Engineer-in-Charge.					
a)	Powder coated minimum thickness 50 micron aluminium tubular handle bar.	14.00	each			
5.35	Providing and fixing 100mm brass locks (best make of approved quality) for aluminium doors including necessary cutting and making good etc. complete.	5.00	each			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
5.36	Providing and fixing aluminium casement windows fastener of required length for aluminium windows with necessary screws etc. complete.					
a)	Powder coated minimum thickness 50 micron aluminium.	1786.00	each			
5.37	Providing and fixing aluminium round shape handle of outer dia 100mm with SS screws etc. complete as per direction of Engineer-in-charge					
a)	Powder coated minimum thickness 50 micron aluminium	14.00	each			
5.38	Providing and fixing of UL listed fire rated single/double leaf panic exit devices tested in accordance with BS EN 1125: 1997 & BS EN 179: 1997, EN 1670 (Corrosion Resistant), & BS 476 Part 22 (for fire rating) with min. one year warrantee.					
a)	Double Leaf	52.00	each			
5.39	Providing and fixing of fire rated heavy duty door closer tested in accordance with BS:476 Part 22 for fire rating) and BS EN 1154 with minimum one year warranty.					
		52.00	each			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
5.40	Providing and fixing fire rated mortice lock with lever handle tested in accordance with European Standard EN12209 / DIN18251 and 80mm Long cylinder to EN1303 of approved brand and manufacturer having 1 year manufacturers warranty.	52.00	each			
5.41	Providing and fixing 300 mm long stainless steel grade 304 D type pull handle with necessary screws etc. complete.	104.00	each			
Total						

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
6.00	Steel Works					
6.01	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. all complete.					
a)	Fixed to steel windows by welding.	200.00	kg			
6.02	Providing and fixing circular Hexagonal cast iron or M.S sheet box for ceiling fan clamp of internal dia 140mm, 73mm height, top lid of 1.5mm thick M.S. sheet with its top surface hacked for proper bonding , top lid shall be screwed into the cast iron / M.S. sheet box by means of 3.3mm dia. round headed screws, one lock at the corners. Clamp shall be made of 12mm dia M.S. bar bent to shape as per standard drawing.	692.00	Each			
6.03	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete:	18050.00	kg			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
6.04	Steel work welded in built up sections/ framed work including cutting ,hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.					
a)	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works.	1200.00	Kg			
6.05	Providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing and staircase railing including applying a priming coat of approved steel primer.					
a)	M.S. tube.	150.00	Kg			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
6.06	Staircase Railing:- Fabrication, supply and installation of SS 304 grade 900mm high railing made of SS 304 grade handrail pipe of 50 mm OD and 1.6 mm thickness polished with automatic round polishing machine to get a uniform hairline finish mounted with the hel of adjustable solid neck support on balustrade of approved design at 1200mm c/c and at every turn, supporting 3 mid rails of 12mm OD and 1.6 mm thickness with the help of solid connectors of 23 mm dia holding the mid rails by M6 grub screws inserted in baluster and screwed through the baluster with M6 counter sunk screws overall mounted on SS 304 grade base plate with the help of dash fasteners to be treated with K2 solution at all welding joints and passivated.					
		535.00	Mtr			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
6.07	Fabrication, supply and installation of SS 304 grade 1500 mm high parapet railing made of SS 304 grade pipes of 50 mm OD and 1.6 mm thickness polished with Automatic round polishing machine to get a uniform hairline finish, welded and match finished into the pattern as submitted in the drawing, the design of railing shall be as per the enclosed drawing showing diamond pattern overall mounted on SS 304 grade base plate with the help of dash fasteners, railing to be treated with K2 solution at all welding joints and passivated.					
		71.00	Mtr			
	Total					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.00	Flooring					
7.01	Cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate) finised with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete.					
a)	40mm thick with 20mm nominal size stone aggregate.	975.00	sqm			
7.02	Cement plaster skirting (up to 30 cm height) with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement.					
a)	18 mm thick.	128.00	sqm			
7.03	Providing and fixing glass strips in joints of <i>terrazo</i> / cement concrete floors.					
a)	40 mm wide and 4 mm thick.	2438.00	Metre			
7.04	Marble stone flooring/skirting with 18mm thick marble stone (sample of marble shall be approved by Engineer-in-charge) over 20 mm (average) thick base of cement mortar 1:4 (1 cement: 4 coarse sand) laid and jointed with grey cement slurry including rubbing and polishing complete with:					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
a)	Raj Nagar Plain	1603.00	sqm			
b)	Udaipur green marble	3682.00	sqm			
c)	Jaisalmer Stone	236.00	sqm			
7.05	18mm thick Prepolished Granite (Base Rate 120/-/Sqft) in Risers, skirting and dado/wall cladding over 12mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointed with grey cement including pointing with white cement mixed with pigment matching the shade of granite stone all complete and as directed.	978.00	sqm			
7.06	Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) :					
a)	25 mm thick.	2867.00	sqm			
7.07	Kota stone slabs 25 mm thick in risers of steps, skirting, dado and pillars laid on 12 mm (average) thick cement mortar 1:3 (1 cement 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	169.00	sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.08	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS : 15622 (thickness to be specified by the manufacturer) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete.	2796.00	sqm			
7.09	Providing and laying rectified Glazed Ceramic floor tiles 300x300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	664.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.10	Providing and laying vitrified floor and skirting, tiles in different sizes (thickness to be specified by the manufacturer) with water absorption's less than 0.08% and conforming to IS : 15622 of approved make in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement: 4 coarse sand) including grouting the joints with white cement and matching pigments etc., complete					
a)	Size of Tile 60x60 cm	3237.00	sqm			
7.11	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished) machine cut for kitchen platforms, vanity counters, window sills. facias and similar locations of required size of approved shade, colour and texture laid over 20mm thick base cement mortar 1:4 (1 cement : 4 coarse sand) with joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edge to give high gloss finish etc. complete at all levels					
a)	Granite of any colour and shade					
i	Area of slab upto 0.50 sqm	17.00	sqm			
ii	Area of slab over 0.50 sqm.	72.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.12	Extra for providing edge moulding to 18mm thick Granite stone counters, Vanities etc. including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.					
a)	Granite work.	114.50	metre			
7.13	Extra for fixing marble /granite stone over and above corresponding basic item, in facia and drops of width upto 150 mm with epoxy resin based adhesive including cleaning etc. complete.	114.50	metre			
7.14	Extra for providing opening of required size & shape for wash basins/ kitchen sink in kitchen platform, vanity counters and similar location in marble/Granite/stone work including necessary holes for pillar taps etc. including rubbing and polishing of cut edges etc. complete.	50.00	Nos			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.15	Providing & fixing 3.0 mm minimum thickness jointless Acoustic PVC Vinyl flooring and skirting. Total weight of PVC should not be less than 3200g/m ² , polyurethane reinforced (PUR), Abrasion group T: ≤0.04mm, reduction of noise in room=61dB, castor wheel test qualified, impact sound reduction approx +17db, good resistance of chemical and fire, slip resistant (R9 $\mu \geq 0.30$ including the cost of suitable adhesive of approved quality and manufacture.	289.00	sqm			
7.16	Providing and fixing machine tufted pure wool loop pile carpet of approved make and quality having total pile weight of 1500 Gms per sqm, total carpet weight of 2610 Gms per sqm and underlay of 8mm thick PU foam fixed to existing levelled floor with rubber based adhesives of approved brand and manufacture as per specification.	243.00	Sqm			
7.17	Chequered terrazo tiles 22 mm thick with graded marble chips of size up to 6 mm in floors jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing complete on 20 mm thick bed of cement mortar 1:4 (1 cement :4 coarse sand) :					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	Medium shade using 50%white cement 50% ordinary cement	221.00	sqm			
7.18	P/L 8mm thick (EN13329) laminated Flooring including skirting (class use of 23/31 AC 3 with 0.2mm thick direct pressure laminated on top) plank size 1290 X 194 mm & groove construction with edge impregnate with seal to secure long lasting joints ,secured together with the help of suitable glue, conforming to EN 13329.	140.00	sqm			
7.19	38mm thick wood block (parquet) flooring of first class teak wood laid over 25mm thick leveling layer of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10mm nominal size) to be paid separately coated with a thin layer of hot bitumen (blown type) @ 2.45 kg per sqm. including fixing blocks in position after dipping in hot bitumen (blown type) up to half depth, planed, levelled smooth and finished complete.	77.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.20	Granite stone flooring with 18 mm thick granite (Base Rate Rs. 120/- Sqft) stone, rectangular shape, (minimum size of stone should be 0.45 sqm and one dimension not less than 700 mm) as per drawing or as per the pattern as approved by the client/ architect/ engineer, over 20 mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry mixed with pigment to match the shade of stone including rubbing and polishing complete.	1403.00	Sqm			
Total						

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.00	CEILING & ROOFING					
8.01	Providing and fixing 15mm thick Mineral Fibre False Ceiling Tiles or equivalent of size 600x600 mm in true horizontal levelsuspended on inter locking metalgrid of hot dipped galvanied steel sections (Galvanized @ 170 gsm/sqm) consisting of main "T" runner suitably spaced at joints to get required length and of size 24x38mm made from 0.30 mm thick (minimum)sheet spaced at 1200 mm center to center and cross "T" of size 24x25mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600mm panel to form grids of 600x 600mm and laying 15 mm thick mineral fibre false ceiling tiles of approved texture in the grid including, wherever, required, cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats fixed to ceiling with 6 mm dia and 50 mm long dah fasteners, 4 mm GI adjustable rods with galvanised level clips spaced at 1200 mm center to center along main T, bottom exposed approval before execution). The frame work shall be fixed i					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	polyester paint, all complete at all heights as per specificaitons drawings and as directed by Engineer-in-Charge.Only Mineral Fibre false ceiling area will be measured for the purpose of payment.					
a)	With Mineral Fibre Ceiling tiles having NRC value of 0.5 (minimum) CAC 35-39, light reflection 84% (minium), fire rating class A as per ASTM E-84, suitable for 95% relative humidity and also having Thermal Resistance "(R)" =0.33 sqm deg. C/W	1491.00	sqm			
b)	With textured square edge tiles of NRC 0.94 base panel with humidity resistance of 90% RH as per ISO-4611,ASTM C-165 ,ASTM C-303 , ASTM C-1104 and light reflectance upto 85% with Leed points Green Performance certified, and Thermal conductivity K=0.082 W/Mk with sag resistance with normal edge profile. 15mm thick Ceiling tile meeting the fire test required having Class 'A' rating for Flame Ignitability test as per ASTM-E-84.	1107.00	sqm			
Note	The job to be carried out by an approved reputed company having sufficient work experience.					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.02	Providing and fixing thermal insulation of ceiling (under deck insulation) with Resin Bonded Fibre glass wool conforming to IS : 8183 density 24kg/m ³ , 50mm thick, wrapped in 200 G Virgin Polythene bags fixed to ceiling with metallic cleats (50x50x3 mm) @ 60 cm and wire mesh of 12.5mm x 24g wire and mesh, for top most ceiling of building.	2875.00	Sq Mtr.			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.03	Providing and fixing at all height false ceiling including providing and fixing of frame work made of special sections power pressed from M.S. sheet and galvanised in accordance with zinc coating of grade 350 as per IS : 277 and consisting of angle cleats of size 25mm wide x 1.6mm thick with flanges of 22mm and 37mm at 1200mm centre to centre one flange fixed to the ceiling with dash fastener 12.5mm diax40mm long with 6mm dia bolts to the angle hangers of 25x25x0.55mm of required length, and other end of angle hanger being fixed with nut and bolts to G.I. channels 45x15x0.9mm running at the rate of 1200mm centre to centre to which the ceiling section 0.5mm thick button wedge of 80mm with tapered flanges of 26mm each having clips of 10.5mm at 450mm centre to centre shall be fixed in a direction perpendicular to G.I. channel with connecting clips made out of 2.64mm diax230mm long G.I. wire at every junction including fixing the gypsum board with ceiling section and perimeter channels 0.5mm thick 27mm high having flanges of 20mm and					

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1	2	3	4	5	6	7
	30mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450mm centre to centre with 25mm long drive-all screws @ 230mm interval including jointing and fixing to a flush finish of tapered and square edges of the board with recommended filler, jointing tapes, finisher and two coats of primer suitable for board as per manufactures specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed all complete as per drawing and specification and direction of the Engineer in Charge but excluding the cost of painting with :					
a)	12.5 mm thick tapered edge gypsum board conforming to IS: 2095- Part I.	1134.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.04	Providing and fixing 8mm thick clear multi wall polycarbonate sheets of approved quality and shade in desired shape in roofing including the cost of EPDM gaskets , sealing tape , aluminium profile and all necessary accessories complete as per architectural drawings and as directed by Engineer incharge. The item includes designing the complete system and supplying & getting approved from client and / or reputed engineering institue like IIT etc. The detailed shop drawings including supplying structural design calculations based on relevent codal provisions and carrying out water penetration test as per standards followed in India.					
	The whole work is to be done through reputed and approved vendor having experience in polycarbonate work in Commercial/ Govt/ Corporate buildings as per architectural elevation drawings including filling of joints with silicon sealent and also with masonry/ RCC work, at all heights including double heights, straight or curved etc. complete in all respect. (Plan Area shall be measured for the payment) (M.S. Framing to be paid for seprately)	744.00	Sqm			

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1	2	3	4	5	6	7
8.05	Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed portions of W.C., kitchen and the like consisting of :					
i)	v) 1st course of applying cement slurry @ 4.4 Kg/sqm mixed with water proofing compound conforming to IS 2645 in recommended proportions including rounding off junction of vertical and horizontal surface.					
ii)	vi) 2nd course of 20mm cement plaster 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface.					
iii)	vii) 3rd course of applying blown or residual bitumen applied hot at 1.7 Kg. per sqm of area.					
iv)	viii) 4th course of 400 micron thick PVC sheet. (Overlaps at joints of PVC sheet should be 100 mm wide and pasted to each other with bitumen @ 1.7 Kg/sqm.)	1214.00	sqm			

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1	2	3	4	5	6	7
8.06	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: a) Applying a slurry coat of neat cement using 2.75 kg/sqm. of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300mm height including cleaning the surface before treatment. b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115mm size with 50% of cement mortar 1:5 (1 cement: 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound to IS : 2645 and approved by Engineer - in - charge to required slope and treating similarly the					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	adjoining walls upto 300 mm height including rounding of junctions of walls and slabs c) After two days of proper curing applying a second coat of cement slurry using 2.75kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge. d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement: 4 coarse sand) admixed with water proofing compound conforming to IS: 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3mm deep. e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineer-in-Charge :					
a)	With average thickness of 120mm and minimum thickness at khurra as 65 mm.	3266.00	sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.07	Providing and laying APP (Atactic Polypropylene Polymer) modified prefabricated five layer 3mm thick water proofing membrane, black finished reinforced with non-woven polyester matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 ltr/sqm. by the same membrane manufacture of density at 25°C, 0.87-0.89 kg/ltr and viscosity 70-160 cps. Over the primer coat the layer of membrane shall be laid using Butane Torch and sealing all joints etc., and preparing the surface complete. The vital physical and chemical parameters of the membrane shall be as under : Joint strength in longitudinal and transverse direction at 23°C as 650/450N/5cm. Tear strength in longitudinal and transverse direction as 300/250N. Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D - 5147. The laying of membrane shall be got done through the authorised applicator of the manufacturer of membrane :					
a)	3 mm thick	4180.00	sqm			
	Total					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
9.00	Finishing					
9.01	12 mm cement plaster of mix:					
a)	1:6 (1 cement: 6 fine sand)	17743.00	sqm			
9.02	15 mm cement plaster on the rough side of single or half brick wall of mix:					
a)	1:6 (1 cement: 6 fine sand)	21053.00	sqm			
9.03	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement: 5 coarse sand) finished with a top layer 6mm thick cement plaster 1:6 (1 cement: 6 fine sand).	12872.00	sqm			
9.04	6 mm cement plaster of mix:					
a)	1:3 (1 cement: 3 fine sand)	10994.00	sqm			
9.05	Neat cement punning	550.00	sqm			
9.06	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.	8043.00	sqm			
9.07	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete	29915.00	Sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
9.08	White washing with lime to give an even shade:					
a)	New work (three or more coats)	300.00	sqm			
9.09	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade					
a)	New work (two or more coats) over and including priming coat with cement primer.	18820.00	sqm			
9.10	Finishing walls with Acrylic Smooth exterior paint of required shade:					
a)	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including base coat of water proofing cement paint applied @ 2.20 kgl10 sqm).	700.00	sqm			
9.11	Applying one coat of cement primer of approved brand and manufacture on wall surface:					
a)	Cement primer.	34792.00	sqm			
9.12	Finishing walls with textured exterior paint of required shade:					
a)	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including base coat of water proofing cement paint applied @ 2.20kg/1 0 sqm.	13151.00	sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
9.13	Wall painting with plastic emulsion paint of approved brand and manufacture to give an even shade:					
a)	Two or more coats on new work	34792.00	sqm			
9.14	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade:					
a)	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture.	2009.00	sqm			
9.15	Providing and fixing 24 gauge and 18mm mesh size chicken wiremesh at junction of concrete and brick work and other locations at all heights including cutting to required size and side laps of minimum 75mm and fixing in positions with nails/screws etc. as directed and as required at site.	1350.00	sqm			
9.16	Painting runway/taxi track/apron marking with adequate no. of coats to give uniform finish with road marking paint of superior make as approved by the Engineer-in-charge i/c cleaning the surface of all dirt, scales, oil, grease and other foreign material etc. and lining out complete.					
	New work (Two or more coats)	200.00	sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
9.17	Providing and applying 2.5mm thick road marking strips (retro-reflective) of specified shade/ colour using hot thermoplastic material by fully/ semi automatic thermoplastic paint applicator machine fitted with profile shoe, glass beads dispenser, propane tank heater and profile shoe heater, driven by experienced operator on road surface including cost of material, labour ,T&P, cleaning the road surface of all dirt, seals, oil, grease and foreign material etc. complete as per direction of Engineer-in-charge and accordance with applicable specifications.	100.00	sqm			
Total						

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.00	Miscellaneous					
10.01	Providing and fixing dry cladding upto 10 metre heights with gang saw cut stone with (machine cut edges) of uniform colour and size upto 1mx1m, fixed to structural steel frame work and/ or with the help of cramps, pins etc. and sealing the joints with approved weather sealant as per Architectural drawing and direction of Engineer-in-charge. (The steel frame work, stainless steel cramps and pins etc. shall be paid for separately.)					
a)	25 mm thick Granite Stone of approved quality (Base Rate Rs 200/- per Sqft, Base rate is inclusive of polishing and/or flaming or sand blasting as required)	1066.80	sqm			
b)	Gwalior sand stone- 30 mm thick	1600.20	Sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.02	Providing and fixing structural steel frame (for dry cladding with gang saw cut with machine cut edges stone) on walls at all heights using M.S. square/ rectangular tube in the required pattern as per architectural drawing including cost of cutting, bending, welding etc. The frame work shall be supported in wall with the help of MS brackets/ lugs of angle iron/ flats etc. which shall be welded to the frame and embedded in brick wall with cement concrete block 1:2:4 (1 cement:2 coarse sand :4 graded stone aggregate 20mm nominal size) of size 300x230x300mm including cost of necessary centring and shuttering and with approved expansion hold fasteners on CC/RCC surface including drilling necessary holes. Approved cramps/ pins etc. shall be welded to the frame work to support stone cladding the steel work will be given a priming coat of Zinc primer as approved by Engineer-in-charge and painted with two or more coats of epoxy paint (Shop drawings shall be submitted by the contractor to the Engineer-in-charge for approval before execution). The frame work shall be fixed in true					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	horizontal & vertical lines/planes. (Only structural steel frame work shall be measured for the purpose of payment, stainless steel cramps shall be paid for separately and nothing extra shall be paid.)	8001.00	Kg			
10.03	Providing and fixing adjustable stainless steel cramps of approved quality and of required shape and size adjustable with stainless steel nuts bolts and washer (total weight not less than 260 gms) for dry stone cladding fixed on frame work- at suitable location including making necessary recesses in stone slab, drilling required holes etc complete as per direction of the Engineer-in-charge.	5334.00	each			
10.04	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement :3 coarse sand : 6graded stone aggregate 20mm nominal size) over 75mm bed by dry brick ballast 40mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth	638.00	sqm			
10.05	Providing and fixing Wooden Wall panelling with the following specification:					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
a)	Frame work of chemically treated (for termites) seasoned sal wood 50 X 50 mm in horizonntal & Vertical frame 600 X 600 mm c/c and along doors, windows etc, fixed rigidly with suitable desh fastners etc all complete as required at site.					
b)	Providing and fitting 50 mm thick glass wool of 24 kg/cum density wrapped in 200G virgin polythene bags					
c)	Providing and fixing 20 mm thick first quality rubber wood (as per approved sample) slats/panels of required width for skirting and panelling fixed over wooden base giving 3 mm gap between the panels, as per drawing including required hardware, beading etc all complete.					
d)	Malamine polishing over wooden panelling (Area of paneling shall be measured for complete item)	442.00	sqm			
10.06	Providing and fixing wall panelling with the following specification:					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
a)	Frame work of chemically treated (for termites) seasoned sal wood 50 X 50 mm in horizonntal & Vertical frame 600 X 600 mm c/c and along doors, windows etc, fixed rigidly with suitable desh fastners etc all complete as required at site.					
b)	Providing and fitting 50 mm thick glass wool of 24 kg/cum density wrapped in 200G virgin polythene bags					
c)	Providing and fixing fabric cladding (Base rate of fabric Rs 400 per sqm) fixed with suitable adhesive over 19 mm thick accousitc board of approved quality fixed over wooden base including all hardware, beading etc complete,	41.00	sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.07	Designing, supplying, fabrication and installation of semi unitised Structural glazing system in the form of fixed panels, using specially designed aluminium extruded sections, mullions and transoms having 25 micron Anodising of approved colour and shade and make with mullions fixed on the RCC beams/columns through adequately designed brackets including providing masking tape on the profiles for safety against external scratches on site complete with approved silicon sealant EPDM gasket etc. to make the structural glazing air tight and water tight as per standards and as per Architect's drawings and specifications. The design to be as per BIS code for required wind pressure IS: 875 part III and use of aluminium section alloy as per IS:8147.					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
a)	System design to strictly consider for thermal movements, air infiltration, water penetration, seismic movement and structural movement. Contractor to furnish shop drawings along with sequence of work for approval of Engineer-in-charge. The minimum section shall be 131x66x2mm and per sqmt weight shall be 10kg approx., the item shall be measured and paid for actual surface area of structural glazing/aluminium composite panel supported on the frame. The work shall be carried out by the specialised agency approved by Engineer in Charge.	2059.00	SqM			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.08	Extra for providing & fixing 24mm made up thickness insulated glass over above corresponding item hermetically sealed with 6mm heat strengthend toughened solar control off line coated high performance temperable glass of approved colour having reflective soft coating and 6mm clear toughned float glass inside with 12mm dry air cavity between two glass panes separated by a hollow aluminium spacer bar with twin lines of micro holes as approved filled with molecular desiccant of approved make and using primary hot meld duly and secondary polysulphide or silicon sealant of approved make all complete over above item. (U value less than 2.85w/sqm k, shadding cofficent less than 0.55, solar factor less than 0.25, light transmission minimum 25%)	2059.00	Sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.09	Providing, cutting, bending and fixing 4mm thick aluminium composite cladding on external façade with water tight system either curved or straight or circular in plan. Skin material 0.5mm thick aluminium sheet (3005 H6) core material natural polyethylene, aluminium cladding panel to be of approved colour/shade fixed with extruded aluminium basic frame, angle cleats, weather sealants, rivets, GI brackets all as approved, using suitable chemical/anchor bolts on structural steel work including necessary accessories complete in all respects (frame work to be paid separately).					
	(Rate should be quoted considering enclosed particular specifications and provision of openable access panels for services wherever required) visible surface area shall be measured for payment. With weather silicon sealant of approved make, non-streaking/ staining weather sealant of approved make.					
	On curved or straight surfaces including cill and jambs.	996.00	Sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.10	Providing and laying integral cement based treatment for water proofing on horizontal surface at all depth below ground level for under ground structures as directed by Engineer-in-Charge and consisting of : i) 1st layer of 22mm to 25mm thick approved and specified rough stone slab over a 25mm thick base of cement mortar 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound conforming to IS:2645 in the recommended proportion over the leveling course (leveling course to be paid separately). Joints sealed and grouted with cement slurry mixed with water proofing compound. ii) 2nd layer of 25mm thick cement mortar 1:3 (1 cement: 3 coarse sand) mixed with water proofing compound in recommended proportions. iii) Finishing top with stone aggregate of 10mm to 12mm nominal size spreading @ 8 cudm/sqm thoroughly embedded in the 2nd layer.					
a)	Using rough kota stone.	626.00	Sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.11	Providing and laying integral cement based treatment for water proofing on the vertical surface by fixing specified stone slab 22 mm to 25mm thick with cement slurry mixed with water proofing compound conforming to IS:2645 in recommended proportions with a gap of 20mm (minimum) between stone slabs and the receiving surfaces and filling the gaps with neat cement slurry mixed with water proofing compound and finishing the exterior of stone slab with cement mortar 1:3 (1 cement : 3 coarse sand) 20mm thick with neat cement punning mixed with water proofing compound in recommended proportion complete at all levels and as directed by Engineer-in-charge :					
a)	Using rough Kota stone	652.00	Sqm			
10.12	Water proofing treatment by Chemical Injection system(preconstruction)					
a)	HORIZONTAL SURFACE (RAFT SLAB)					
	A. Before the raft reinforcement is placed in position:					
	i) Applying Cement slurry (cement and polymer based water proofing compound) in proportion as per manufacturer specifications is spread on already laid PCC.					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	ii) Providing and laying 20mm thick cement mortar 1:4 (1 cement: 4 coarse sand) mixed with polymer based water proofing compound is over the slurry. Stone aggregates 12mm and down size is embedded at random.					
	iii) After 24 hours, spreading cement slurry (cement and polymer based water proofing compound) on the 1st layer of mortar.					
	iv) Providing and laying 2nd layer of 20mm thick cement mortar 1:4 (1cement:4 coarse sand) mixed with polymer based water proofing compound. Stone aggregate 12mm down is embedded at random.					
	v) After curing for two days, spreading cement slurry mixed with water proofing compound over the 2nd layer of cement mortar. Thereafter, the 3rd and final layer of 20mm thick cement mortar in 1:4 (1 cement: 4 coarse sand) mixed with water proofing compound is laid and finished smooth to receive raft foundation.					
	vi) The total thickness of the treatment from operation i to v will be about 60mm.					
	B. After The reinforcement of raft is placed in position:					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	i) Providing and fixing 25mm dia GI threaded grouting nozzles of adequate length at the specified locations @ 1.50 metre c/c or as shown in the drawing all over the slab. The grouting nozzles are tied with reinforcement in such a manner as not to choke its end during concrete operations. The top of these nozzles protrudes above the raft concrete.					
	ii) After minimum 7 days of concreting, cement grout of cement and polymer based water proofing compound (non shrinkage grouting compound) in proportion as specified is injected, through these nozzles at a pressure of 2.5 to 3.0 Kg/Sq.cm.					
	iii) After grouting, top of the nozzles is cut and the space is filled with cement mortar 1:2 (1 cement: 2 coarse sand) mixed with polymer based water proofing compound. Area of raft treated shall be measured for payment					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	(leveling course to be paid separately). Joints sealed and grouted with cement slurry mixed with water proofing compound. ii) 2nd layer of 25mm thick cement mortar 1:3 (1 cement: 3 coarse sand) mixed with water proofing compound in recommended proportions. iii) Finishing top with stone aggregate of 10mm to 12mm nominal size spreading @ 8 cudm/sqm thoroughly embedded in the 2nd layer.	5307.00	Sqm			
b)	Retaining Wall					
	i) Preparing the external surface and cement slurry mixed with polymer based water proofing compound.					
	ii) Providing and laying 25mm thick cement mortar in 1:4 (1 cement : 4 coarse sand) mixed with polymer based water proofing compound in two layers with chicken wire mesh 26 or 24 gauge 25mm size in between the two layers.					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	iii) Placing G.I. pipes at 1.5m c/c and at location as directed or indicated as in drawing and securely fastened to the reinforcement prior to shuttering and concreting or alternately by drilling holes (25mm to 32mm dia) in the concrete upto a depth as directed or as shown in the drawing all over the wall surface @ 1.50mt. c/c and as shown in the drawing. Treatment along all construction joints by providing nozzles, as above, shall also be executed.					
	iv) Fixing 25mm dia G.I. threaded nozzles in these holes with cement mortar 1:4(1 cement: 4 coarse sand) mixed with water proofing compound.					
	v) Injecting cement grout of cement and polymer based water proofing compound (non shrinkage grouting compound) in proportion as per manufacturer specification or as specified in these nozzles at a pressure of 2.5 to 3.0 Kg/Sq.cm.					
	vi) After the grout the nozzles are cut and filled with cement mortar 1:2 mixed with polymer based water proofing compound in proportion as specified and finished smooth.					
	Area of walls treated shall be measured for payment	3045.00	Sqm			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.13	Providing and fixing Push back type Auditorium chairs 21" width total height of 38"-40" with powder coated M.S. frame work, PU seat and back and upholstered with inherent fire retardant fabric complete with recline arrangement and fixing over floor with necessary nuts bolts fasteners etc complete as per approved design and sample. Basic rate of fabric shall be Rs.350-400/- per metre	380.00	Each			
10.14	Dismantling manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material outside the site premises with all lead and lift to municipal dumping grounds or as per direction of Engineer-in-charge :					
a)	Water bound macadam road	200.00	Sqm			
b)	bituminous road	200.00	Sqm			
	Total					

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.00	ROAD WORK, DEVELOPEMENT AND SIGNAGE					
11.01	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm. depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth lead upto 50 metres.	3000.00	SQM			
11.02	Supplying and stacking at site.					
a)	90 mm to 45 mm	300.00	CuM			
b)	63 mm to 45 mm	266.00	CuM			
11.03	Laying spreading and compacting stone aggregate of specified sizes to WBM specifications including spreading in uniform thickness, hand picking, rolling with 3 wheeled road/ vibratory roller 8-10 tonne in stages to proper grade and camber, applying and brooming requisite type of screening/ binding material to fill up interstices of coarse aggregate watering and compacting to the required density.	400.00	Cum			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.04	Providing and laying C.C. pavement of mix M25 with ready mixed concrete from batching plant. The ready mixed concrete shall be laid and finished with screed board vibrator, vacuum dewatering process and finally finished by floating, brooming with wire brush etc. complete as per specifications and directions of Engineer-in-charge. (The panel shuttering work shall be paid for separately).	916.00	Cum			
11.05	Providing and laying in position bitumen hot sealing compound for expansion joints etc					
a)	Using grade 'A' sealing compound.	15000.00	Per cm depth per cm width per m length			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.06	Providing and laying 60mm thick factory made cement concrete interlocking paver block of M -30 grade made by block making machine with strong vibratory compaction and of approved size and design/ shape laid in required colour and pattern over and including 50mm thick compacted bed of fine sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.	1000.00	sqm			
11.07	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement in position to the required line, level and curvature jointed with cement mortar 1:3 (1 cement: 3 coarse sand) including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm) including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured for payment). (Precast C.C. kerb stone shall be approved by Engineer-in-charge).	50.00	Cum			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.08	Trenching in ordinary soil upto a depth of 60cm including removal and stacking of serviceable materials and then disposing of by spreading and neatly levelling with in a lead of 50m and making up the trenched area to proper levels by filling with earth or earth mixed with sludge or/and manure before and after flooding trench with water (excluding cost of imported earth, sludge or manure).	1350.00	Cum			
11.09	Supplying and stacking sludge at site including royalty and carriage up to 1 km (sludge measured in stacks will be reduced by 8% for payment).	150.00	Cum			
11.10	Rough dressing the trenched ground including breaking clods & Uprooting weeds from the trenched area after 10 to 15 days of its flooding with water including disposal of uprooted vegetation.	3000.00	Sqm			
11.11	Spreading of sludge, dump manure or/and good earth in required thickness (Cost of sludge, dump manure or/ and good earth to be paid separately).	150.00	Cum			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.12	Rough dressing the trenched ground including breaking clods & Uprooting weeds from the trenched area after 10 to 15 days of its flooding with water including disposal of uprooted vegetation.	3000.00	Sqm			
11.13	Supply & sprinkling of Neem cake (at the rate of 6 kg per 100 sq. metres) and fine dressing the ground.	3000.00	Sqm.			
11.14	Supply & grassing with "Calcutta Doob" grass in rows 7.5cms, apart in either direction including fine dressing the ground to be levelled, supply and filling with good earth if needs, watering & maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds & fit for mowing. Anti-termite shall be applied with CHLOROPYRIPHOS (DURSBAN make or equivalent) at the rate of 2ml per litter in the first watering.	3000.00	Sqm.			

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BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.15	Digging holes in ordinary soil and refilling the same with the exca-vated earth mixed with manure or sludge in the ratio of 2:1 by volume (2 parts of stacked volume of earth after reduction by 20% : 1part of stacked volume of manure after reduction by 8%) flooding with water, dressing including removal of rubbish and surplus earth, if any with all leads and lifts (cost of manure, sludge or extra good earth if needed to be paid for separately):					
a)	Holes 1.2 m dia and 1.2 m deep.	25.00	Each			
b)	Holes 60 cm dia, and 60 cm deep.	25.00	Each			
11.16	Providing fabricating and fixing of signages of varying sizes and shapes using three mm thick PVC sheet at base with self adhesive coloured vinyl with graphicson top of glow tape complete including fixing on wall with screws and washers or hanging on ceiling with GI chain/GI Bar complete as per technical specifications and directions of Engineer.	2760.00	sq inch			

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.

BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.17	Providing and fixing of sinages of varying sizes and shapes using stainless steel sheet of minimum 16G thickness brush finish including engraving/etching of letters of required size filled with colour as desired by engineer,fixing with ss screws on walls	8000.00	sqinch			
11.18	Providing and fixing of sinages of varying sizes made of hollow aluminum sections of 150 mm width.with both hollow ends caped with suitable PVC/aluminium cover plates of required including hanging from ceiling by two adjustable suspenders of appropriate dia made of MS/GI bars ,lettering on vinyle sheet and pasting on it with pictogram complete as per technical specifications and directions of Engineer.	1500.00	r/ft			
11.19	Providing and fixing of external sinages of varying sizes and shapes using GI sheet of atleast 22 G / aluminium sheet of suitable gauge complete as per technical specifications and directions of Engineer.	90.00	sqft			

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.

BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.20	Providing and fixing MS support frame for external signages made of structural steel including welding, primering, painting foundation with 1:1.5:3 cement concrete complete as per drawing, technical specifications and directions of engineer.	180.00	Kg			
11.21	Providing,fabricating and fixing neon glow signages of approved make with 100% handcraft glass tubes in letter shape of required colour of dia 9-12 mm including making the electrical wiring for illumination,transformer,connection complete as per technical specifications and directions of engineer.	500.00	sqft			
11.22	Providing,fabricating and fixing digitally printed translites(Technova) with multicolour design on roland /HP printers mounted on acrylic sheet 3mm further mounted on 22 gauge powder coated GI box with phylips /surya tubes inside including installtion on wall electric fittings etc on walls or otherwise complete .	48.00	sq ft			

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.

BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.23	Providing fabricating installation and fixing of backlit flex signages on Hanwa/star 18 ounce flex signages printed on high resolution printer mounted on MS sheet on framed MS structure further fixed on 24 gauge MS /GI box with phylips/surya fittings inside including transformers etc, electric wiring etc complete.	500.00	sqft			
11.24	Providing, fabricating installation and fixing of glass finish SS letters made of 20 gauge SS 304 sheet of required size and shape with neatly fabricated joints properly welded and grinded with all corners rubbed and polished with arrangement of screws in the letter itself for mounting on the walls including cost of screws and fixing complete as per directions of Engineer.	2000.00	sqinch of each letter			
11.25	Providing fabricating and fixing of retroreflective vinyl signages of varying sizes and shapes pasted on aluminium/GI sheet of 18 gauge with provision of fixing on MS structure complete as per technical specifications and directions of Engineer.	30000.00	sqinch			

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.

BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.26	Providing fabricating , installation and fixing of poster frame with digitally printed transparent film technova sandwiched between 2-3 mm clear acrylic sheet fixed on the wall/MS with the help of suitable steel studs	2100.00	sqft			
11.27	Providing fabricating installation and fixing of night vision sinages visible in complete darkness computer cut vinyle pasted on 3mm acrilic sheet and further fixed on wall/hanging from ceiling with the help of MS/GI rods complete as per technical specifications and directions of engineer.	2100.00	sq inch			
11.28	Providing. fabricating and fixing of ACP aluminum composite plastic signs with 3 mm ACP sheet, using 1" ms pipe frame, with anti rust coating, back with G.I. and 5 sides with ACP sheet, lettering to be done with 5mm acrylic sheet and vinyls if needed backlit with Philips slim lite tube light fittings, acrylic letters to protrude out and be lit, together with a timer for switching on and off at required timings, including transportation and fixing at site as per the direction of the site engineer	1050.00	sq.ft.			

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.

BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.29	Providing, fabricating and fixing of frontlit signages with solvent printing on 13 oz Hanwa/LG make flex printing on Vutek/ Sytec/ Edge print etc with UV cure inks with minimum life of 1 year for non fading, stretched on 25mm sq M.S. pipe, with 28 gauge tin sheet on the back for withstanding wind pressure with adequate lights in the front. The front lighting to be Metalite (white light) of 150 watts and Philips make to be fixed with metal arms at least 4ft protruding outside.	2625.00	sq.ft.			
11.30	Providing, fabricating and fixing digital posters inside the hospitals on 5mm sun board sheet with 1440 dpi digital printing on Technova/ LG coated vinyl duly laminated and pasted on the sheet and fixed on the walls with help of steel studs or mirror screws as per the direction of the engineer	788.00	sq.ft.			

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.

BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.31	Providing fabricating and fixing of name plate pockets outside rooms made of 5mm opaque, milky white acrylic sheet in various sizes and with provision of fixing acrylic plates as per boq-1 on the same, the pockets should be well crafted using high quality adhesives and should be fixed on the wall with the help of screws etc. and as per the direction of the engineer.	2100.00	sq.inch			
Sub Total						

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.

BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	PART B: Demolition /Disposal by sale					
	Dismantling of existing buildings/ward and other structures comprising of concrete, RCC, brick work, flooring, finishes ,pavement, external services etc.including taking out all doors, windows and ventilators,roofing, electrical,water supply, sanitary installations, rain water pipe with all fittings and fixtures etc. complete . The job also include all excavations, fillings, levelling and stacking of all servicable material at desired location and including the cost of transportation and disposal of all the unservicable materials to the nearest municipal dumping ground complete . The entire site of dismantled buildings/ structures shall be cleared and levelled as directed. Approx. covered area of buildings at all floors to be dismantled is mentioned in the enclosed drawing.					
	All servicable and unserviceable material shall be the property of the bidder except all electrical fittings, fans, airconditioners, furniture, and other loose articles belonging to the owner which shall be deposited by the bidder to the owner's store at no extra cost.					

Project Name: Construction of proposed buildings at Rajkumari Amrit Kaur Nursing College, New Delhi.


BOQ for Civil Work						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	An indicative drawing is enclosed here with for the convenience of bidders, However the bidders may actually verify the detail from the site. No claim on this shall be entertained.					
	All malba and unserviceable materials obtained as a result of dismantling/demolition shall be disposed off by the bidder outside the premises to the nearest municipal dumping ground or at the bidder;s place, for which nothing extra is payable.					
	The bidder has to quote the credit rate for demolition and disposal by sale, the rate should include all costs involved in dismantling/ demolition of the existing structures as shown in the enclosed drawing, disposal of unserviceable materials, cost of serviceable materials, clearing of site and taking all precautions so as not to harm the adjacent buildings and mankind in the premises.					
	Creidit amount to be quoted by the bidder					

ABSTRACT

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

S.No.	DESCRIPTION	Amount in figures(Rs.)
A	INTERNAL PLUMBING ,	
1. 00	SANITARY FIXTURES	
2. 00	SOIL, WASTE AND VENT PIPES	
3. 00	WATER SUPPLY	
4. 00	SEWERAGE AND DRAINAGE	
5. 00	EARTH WORK	
B	EXTERNAL PLUMBING ,	
6.00	EXTERNAL WATER SUPPLY	
7.00	EXTERNAL WATER SUPPLY(for use of recycling of STP treated water for horticulture)	
8.00	RAIN WATER PIPING	
9.00	BOREWELL	
10.00	RAIN WATER HARVESTING	
11.00	SOLAR WATER HEATING SYSTEM & RECIRCULATING SYSTEM	
12.00	WATER TREATMENT PLANT	
13.00	SEWAGE TREATMENT PLANT	
14.00	WATER SUPPLY ELECTRICAL PANEL	
	TOTAL	

GRAND TOTAL (RS)

	Design & Engineering Department						
Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)							
Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)	
1	2	3	4	5	6	7	
	Note: Based on the tender drawing the agency has to prepare the internal & external plumbing shop drawing and obtain the approval of the same before execution						
1.00	SANITARY FIXTURES						
1.01	Providing&fixing water closet squatting pan(Indian W.C.Pan)with 100 mm sand cast iron P or S strap,10 Litre low level white P.V.C flushing cistern with manually controled device(handle lever) conforming to IS:7231 with all fittings&fixture complete including cutting and making good the walls & floors wherever required.						
a)	White vitreous china orissa pattern W.C. pan of size 580 x 440 mm with integral type foot rests.	Each	9.0				
1.02	Providing and fixing white vitreous china pedestal type water closet (European type) with seat and lid, 10 litre low level white vitreous flushing cistern and C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, overflow arrangement with specials of standard make and mosquito proof coupling of approved municipal design complete including painting of fittings and brackets, cutting and making good the walls and floors wherever required:						
a)	W.C. pan with ISI black solid plastic seat & lid.	Each	107.0				

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
1.03	Providing and fixing white vitreous China flat back or wall corner type lipped front urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I. clamps complete, including painting or fittings and brackets, cutting and making good the walls and floors wherever required.					
a)	One urinal basin with 5 litre white PVC automatic flushing cistern	Each	1.0			
b)	Range of two urinal basin with 5 litre white PVC automatic flushing cistern.	Each	1.0			
c)	Range of three urinal basin with 10 litre white PVC automatic flushing cistern.	Each	4.0			
1.04	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required:					
a)	White vitreous china wash basin size 550x 400 mm with a pair of 15mm C.P. brass pillar tap.	Each	115.0			
1.05	Providing and fixing Stainless Steel A ISI 304 (18/8) kitchen sink as per IS 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required:					
a)	Kitchen sink with drain board 510x1040 mm bowl depth 200mm.	Each	3.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
1.06	Extra for using coloured W.C. pan instead of white W.C pan					
a)	Orissa pattern W.C. pan 580x440 mm	Each	9.0			
1.07	Extra for using coloured pedestal type W.C. pan (European type) with low level cistern of same colour instead of white vitreous china W.C. pan and cistern	Each	107.0			
1.08	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug 40 mm C.P. brass waste and 40 mm brass trap with necessary C.P. brass unions complete including painting of fittings and brackets,cutting and making good the walls and floors wherever required:					
a)	Size 600x450x200 mm	Each	15.0			
1.09	Providing and fixing superior glass (of approved quality) and of required shape and size with plastic moulded frame of approved make and shape with 6 mm thick hard board backing.					
a)	Rectangular shape 453x357 mm	Each	115.0			
1.10	Providing and fixing 600x120x5 mm glass shelf with edges round of supported and anodised aluminium angle frame with C.P. brass brackets and guard rail complete fixed with 40 mm long screws, rawl plugs etc., complete.	Each	75.0			
1.11	Providing and fixing toilet paper holder .					
a)	Vitreous china	Each	107.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
1.12	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour weighing not less than 105 gms.	Each	110.0			
1.13	Providing and fixing water Jet Nozzle with hose pipe and half turn CP brass angle valve to be fitted with seat cover of european water closet complete in all respect of approved quality	Each	107.0			
1.14	Providing and fixing soap tray with CP brass lid and brackets fixed to wooden cleats with CP brass screws.(Jaquar model no.1131 or equivalent model of other approved make).	Each	69.0			
1.15	Providing and fixing CP brass towel rail size of 600x20 mm of approved make complete with CP brackets fixed to wooden cleats with CP brass screws(Jaquar model no.1111 or equivalent model of other approved make)	Each	74.0			
1.16	Providing and fixing brass coat hook of approved quality and make complete with material of fixing	Each	150.0			
1.17	Extra for providing and fixing white vitreous china oval shape wash basin in place of normal wash basin with CI/MS brackets painted white, 15 mm CP brass pillar taps, 32 mm CP brass waste of standard pattern, including painting of fittings and brackets cutting and making good the walls wherever required					
a)	Counter top oval shape wash basin size 550x470 mm with centre tap hole, single 15 mm CP brass swan neck type pillar tap	Each	115.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
1.18	Extra for providing and fixing white vitreous china wall hung type water closet (European type) in place of normal pedestal type water closet with white solid plastic seat and lid concealed flushing cystem 9 ltrs capacity(min) approximate size(400x300x100)comprising of SS actuating panel with dual flush with fittings ,specials of standard make(Viega,ACO,Kohler,Jaquar) and complete including painting , cutting and making good the walls and floors wherever required:	Each	20.0			
1.19	Providing and fixing stainless steel grab bar 20mm dia of required length with PVC cleats, C.P. brass screws etc. complete.	Each	31.0			
SUB TOTAL(SANITARY FIXTURES)						

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
2.00	SOIL, WASTE AND VENT PIPES					
2.01	Providing and fixing soil, waste and vent pipes.					
a)	100 mm dia.					
a i)	Centrifugally cast (spun) iron socketed pipe as per IS:3989	Metre	2005.0			
b)	150 mm dia.					
a i)	Centrifugally cast (spun) iron socketed pipe as per IS:3989	Metre	60.0			
2.02	Providing and fixing M.S holder-bat clamps of approved design to Sand Cast iron/ cast iron (spun) pipe embedded in and including cement concrete blocks 10x10x10 cm of 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) including cost of cutting holes and making good the walls etc.					
a)	for 100 mm dia. pipe	Each	202.0			
2.03	Providing and fixing bend of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.					
a)	100 mm					
a ii)	Sand cast iron S&S as per IS-3989	Each	92.0			
a)	150 mm dia.					
a ii)	Sand cast iron S&S as per IS-3989	Each	2.0			
2.04	Providing and fixing plain bend of required degree.					
a)	100 mm					
a ii)	Sand cast iron S&S as per IS:3989	Each	235.0			
a)	150 mm					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
a ii)	Sand cast iron S&S as per IS:3989	Each	10.0			
2.05	Providing and fixing heel rest sanitary bend.					
a)	100 mm dia					
a.ii)	sand cast iron S&S as per IS-3989	Each	25.0			
2.06	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.					
a)	100x100x100mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	128.0			
2.07	Providing and fixing single equal plain junction of required degree					
a)	100x100x100mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	137.0			
a)	150x150x150 mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	10.0			
2.08	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts and nuts complete					
a)	100 mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	17.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
2.09	Providing and fixing terminal guard.					
a)	100 mm	Each	25.0			
a.ii)	sand cast iron S&S as per IS-3989					
2.10	Providing and fixing collar					
a)	100 mm					
a.ii)	Sand cast iron S&S as per IS-3989	Each	138.0			
a)	150 mm					
a.ii)	Sand cast iron S&S as per IS-3989	Each	8.0			
2.11	Providing lead caulked joints to sand cast iron /centrifugally cast (spun) iron pipes and fittings of diameter:					
a)	100 mm	Each	1890.0			
a)	150mm	Each	100.0			
2.12	Providing Drip seal joint of approved make for the sand cast iron/centrifugally cast iron pipes where the workability of lead joint can be effected due to space constraints.					
a)	100 mm	Each	825.0			
a)	150 mm	Each	40.0			
2.13	Providing and fixing M.S. stays and clamps for sand cast iron / centrifugally cast (spun) iron pipes of diameter :					
a)	100 mm	Each	25.0			
2.14	Providing and fixing trap of self cleansing design with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors:					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
a) a i)	100 mm inlet and 100 mm outlet Sand cast iron S&S as per IS-3989	Each	110.0			
2.15	Cutting chases in brick masonry walls for following diameter sand cast iron/centrifugally cast (spun) iron pipes and making good the same with cement concrete 1:3:6 (1 cement:3 coarse sand:6 graded stone aggregate 12.5 mm nominal size) including necessary plaster and pointing in cement mortar 1:4 (1 cement: 4 coarse sand):					
a)	100 mm diameter pipe	Metre	180.0			
2.16	Painting sand cast iron / centrifugally cast (spun) iron soil, waste vent pipes and fittings with paint of any colour such as chocolate, grey, or buff etc. over a coat of primer (of approved quality) for new work:					
a)	100 mm diameter pipe	Metre	1110.0			
b)	150 mm diameter pipe	Metre	20.0			
2.17	Providing and fixing floor drain points formed out of 65 mm dia GI elbow, including with 75mm dia Stainless Steel grating with frame, embedded in floor, all complete as directed.	Each	120.0			
2.18	Providing and fixing C.P. brass bottle trap for wash basin including CP waste fittings complete 32 mm dia complete in all respect of approved quality.	Each	115.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
2.19	Providing and fixing C.P. brass bottle trap for urinals & sinks including CP waste fittings complete 32 mm dia complete in all respect of approved quality.	Each	14.0			
2.20	Providing and laying cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) 80 mm thick all-round the SCI/centrifugally S&S pipe diameter.					
a)	100 mm dia	Metre	945.0			
2.21	Providing and fixing dash fastner made of rust proof plated steel for holding the soil/waste supply pipes complete in all respect					
a)	Dash fastner for pipe more than 25 mm dia to 150 mm dia pipe of size 25 mm dia and 75 mm long minimum & shall be capable of taking 6 tonnes load and also include the supporting angles 35x35x5 mm/ of required size or MS bars steel structures as per drawing.	Each	160.0			
2.22	Providing and fixing floor clean out plug consist of CI bend & GI socket heavy class with Brass cap & key for opening male threaded cap etc. including lead caulked to CI pipescomplete in all respects as per drawing/ sample approved by Engineer -in -ChargeFCO (floor clean out plug shall be flushed with floor finish					
	100 mm dia	Each	15.0			
2.23	Providing and fixing clean out plug consist of GI socket/nipple heavy class with threaded pludge for opening male threaded cap etc. including lead caulked to CI pipescomplete in all respects as per drawing/ sample approved by Engineer -in -Charge					
	100 mm dia/150 mm dia	Each	62.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
2.24	Providing and fixing G.I EXTENSION PIECE for 100 mm dia floor trap formed out of main pipe(Type A) with multiple side inlets, suitable for various dia pipes, side connections, including all fixtures and fittings as per site conditions and as per standard details and water tight sealing of joints and area surrounding the grating and as directed.	Each	110.0			
2.25	Providing and fixing cPVC. pipes complete with cPVC fittings including painting, jointing, testing the cost of cutting the chases and making good the same for waste water disposal complete as per direction of engineer incharge.					
a)	32 mm dia nominal bore (Wash basin to floor trap/floor drain)	Metre	263.0			
b)	40 mm dia nominal bore (Sink, Urinal to floor trap)	Metre	36.0			
c)	50 mm dia nominal bore (Floor Drain to Floor Trap)	Metre	302.0			
2.26	Providing & fixing SS floor trap grating 143x143x5mm thick screwable with SS fixed frame of 150x150 mm size as per approved make & model	Each	105.0			
SUB TOTAL(SOIL, WASTE AND VENT PIPES)						

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
3.00	WATER SUPPLY					
3.01	Providing and fixing Chlorinated Polyvenyl Chloride(CPVC)pipes having thermal stability for hot & cold water supply including all CPVC plain &brass threaded fittings i/c fixing the pipe with clamps at 1.0 m spacing.This includes jointing of pipes &fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints ciomplete as per direction of Engineer in charge.					
	Internal work – Exposed on wall					
a)	15 mm nominal outer dia pipes (SDR-11)	Metre	85.0			
b)	20 mm nominal outer dia pipes (SDR-11)	Metre	120.0			
c)	25 mm nominal outer dia pipes (SDR-11)	Metre	185.0			
d)	32 mm nominal outer dia pipes (SDR-11)	Metre	210.0			
e)	40 mm nominal outer dia pipes (SDR-11)	Metre	80.0			
f)	50 mm nominal outer dia pipes (SDR-11)	Metre	310.0			
g)	62.5 mm nominal outer dia pipes (SDR-11)	Metre	190.0			
h)	80 mm nominal outer dia pipes (SDR-11)	Metre	15.0			
3.02	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Concealed work including cutting chases and making good the walls etc.					
a)	15 mm nominal outer dia pipes (SDR-11)	Metre	785.0			
b)	20 mm nominal outer dia pipes (SDR-11)	Metre	550.0			
c)	25 mm nominal outer dia pipes (SDR-11)	Metre	230.0			
d)	32 mm nominal outer dia pipes (SDR-11)	Metre	55.0			
e)	40 mm nominal outer dia pipes (SDR-11)	Metre	20.0			
f)	50 mm nominal outer dia pipes (SDR-11)	Metre	20.0			
3.03	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
	External Work					
a)	25 mm nominal outer dia pipes (SDR-11)	Metre	20.0			
b)	40 mm nominal outer dia pipes (SDR-11)	Metre	20.0			
c)	50 mm nominal outer dia pipes (SDR-11)	Metre	130.0			
d)	62.5 mm nominal outer dia pipes (SDR-11)	Metre	110.0			
3.04	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, including cutting and making good the walls etc.					
	Internal Work- Exposed on walls					
b)	80 mm dia nominal bore	Metre	190.0			
c)	100 mm dia nominal bore	Metre	140.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
3.05	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including, cutting and threading the pipe etc. complete including obtaining approval for connection from DJB/Municipal corporation :					
a)	50 to 80 mm nominal bore (SDR-11)	Each	6.0			
3.06	providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end)					
a)	25 mm nominal bore	Each	48.0			
b)	32 mm nominal bore	Each	30.0			
c)	40 mm nominal bore	Each	9.0			
d)	50 mm nominal bore	Each	11.0			
e)	65 mm nominal bore	Each	9.0			
g)	80 mm nominal bore	Each	12.0			
3.07	Providing and fixing ball valve (brass) of approved quality, High or low pressure with plastic floats complete					
a)	20mm	Each	15.0			
3.08	Providing and fixing brass ferrule with C.I. mouth cover including boring and tapping the main					
a)	25 mm nominal bore	Each	6.0			
b)	40 mm nominal bore	Each	4.0			
3.09	Providing and fixing unplasticised PVC connection pipe with brass unions:					
a)	45 cm length					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
a i)	15 mm nominal bore	Each	476.0			
3.10	Providing and fixing C.P. brass shower rose with 15 or 20 mm inlet					
a)	150 mm diameter	Each	1.0			
3.11	Constructing masonry chamber 30x30x50 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for stop cock, with C.I. surface box 100x100x75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design					
a)	With F.P.s bricks	Each	8.0			
3.12	Constructing masonry chamber 60x60x75 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for sluice valve, with C.I. surface box 100mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
a)	With F.P.s bricks	each	6.0			
3.13	Painting CPVC/G.I. pipes and fittings with synthetic enamel white paint over a ready mixed priming coat, both of approved quality for new work					
a)	15 mm nominal outer dia pipes	Metre	85.0			
b)	20 mm nominal outer dia pipes	Metre	120.0			
c)	25 mm nominal outer dia pipes	Metre	185.0			
d)	32 mm nominal outer dia pipes	Metre	210.0			
e)	40 mm nominal outer dia pipes	Metre	80.0			
f)	50 mm nominal outer dia pipes	Metre	310.0			
g)	65 mm nominal outer dia pipes	Metre	190.0			
3.14	Painting G.I. /CPVC pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality.					
a)	25 mm diameter pipe	Metre	20.0			
b)	40 mm diameter pipe	Metre	20.0			
c)	50 mm diameter pipe	Metre	130.0			
d)	65 mm diameter pipe	Metre	110.0			
3.15	Providing and filling sand of grading zone V or coarser grade all-around the G.I./CPVC pipes in external work					
a)	25 mm diameter pipe	Metre	20.0			
b)	40 mm diameter pipe	Metre	20.0			
c)	50 mm diameter pipe	Metre	130.0			
	65 mm diameter pipe	Metre	110.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
3.16	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI:12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank					
	Treated water Tank and Untreated water tank	per litre	44000.0			
3.17	Providing and fixing C.P brass bib cock of approved quality.					
a)	15 mm nominal bore	Each	110.0			
3.18	Providing and fixing C.P. brass long nose bib cock of approved quality conforming to IS standards and weighing not less than 810 gms. (Marck, Jaquar, othello)					
a)	15 mm nominal bore	Each	145.0			
3.19	Providing and fixing C.P. brass angle valve for basin mixer and geyser/cisterns points of approved quality conforming to IS:8931.					
a)	15 mm nominal bore	Each	298.0			
3.20	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to 18:8931.					
a)	15mm nominal bore.	Each	110.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
3.21	Providing and fixing enclosed type water meter (bulk type) conforming to IS : 2373 and tested by municipal board complete with bolts,nuts rubber, insersions etc. (the tail plases if required will be paid seperatly)					
a)	80mm dia nominal bore	Each	4.0			
3.22	Providing and fixing PTMT ball cock of approved quality, colour and make complete with Epoxy coated aluminium rod with L.P./H.P.H.D. plastic ball.					
a)	40 mm nominal bore, 206 mm long weighin not less than 690 gms	Each	9.0			
b)	50 mm nominal bore, 242 mm long weighin not less than 1240 gms	Each	7.0			
3.23	Cutting holes upto 30x30 cm in walls including making good the same					
a)	with F.P.S bricks	Each	145.0			
3.24	Cutting holes up to 15x15 cm in R.C.C. floors and roofs for passing drain pipe etc. and repairing the hole after insertion of drain pipe etc. with cement concrete 1:2:4 (1 cement:2 coarse sand: 4 graded stone aggregate 20 mm nominal size) including finishing complete so as to make it leak proof	Each	155.0			
3.25	Extra for providing wash basin mixer pillar tap in place of normal pillar tap	Each	60.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
3.26	Extra for providing divertor type shower mixer with provision for shower & single tap in place of 2Nos. concealed stop cock & 2 Nos. CP long nose bib cock complete in all respect of approved make & model	Each	54.0			
3.27	Providing & fixing full way lever operated forged brass ball valve of brass body with forged brass hard chrome plated steel ball tested to a pressure not less than 10 Kg / sqcm with threaded / flanged joints complete with nuts, bolts, gaskets, washers etc.					
a)	15 mm diameter	Each	32.0			
b)	20 mm diameter	Each	42.0			
3.28	Providing and fixing mosquito proof coupling of approved Municipal design for scour and vent pipes for RCC overhead tanks complete in all respects					
a)	20 mm diameter	Each	8.0			
c)	40 mm diameter	Each	5.0			
d)	50 mm diameter	Each	3.0			
3.29	Providing and fixing C.P. brass Overhead (Rain Fall) shower (100mm) with arm and wall flange complete including cutting and making good the walls wherever required.	Each	54.0			
3.30	Providing & fixing 9 mm thick thermal insulation tubing of elastomeric flexible material on hot water supply/return pipes having hermetic blistered closed cell structure of expanded synthetic rubber over pipes/ fitting as per manufacturer's specifications etc.complete.					
a	15 mm to 25 mm diameter	Meter	280.0			
	32 mm to 50 mm diameter	Meter	60.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
3.31	Extra for providing and installing INFRA-RED controlled electrically operated (220V, AC mains) automatic flushing system of approved make instead of urinals with flushing cistern. The automatic flushing system shall comprising of :					
	Light sensing device fixed in recessed metallic box with tamper resistant stainless steel outercase Solenoid valve housed in a recessed metallic box with openable cover mounted at high level (at desired height from finished floor level) complete with interconnecting control wiring in recessed PVC conduit between solenoid valve and sensing unit, including cutting and making good the walls & floor complete and all necessary fittings to make it operational as directed	Each	10.0			
3.32	Extra for in place of pillar tap in wash basin/scrub sink providing and installing INFRA-RED controlled electrically operated (220V, AC mains) automatic tap of approved make instead of pillar tap, comprising of :					
	Light sensing device fixed in tap, Solenoid valve housed in a recessed metallic box with openable cover mounted at high level (at desired height from finished floor level) complete with interconnecting control wiring in recessed PVC conduit between solenoid valve and sensing unit, including cutting and making good the walls & floor complete and all necessary fittings to make it operational as directed	Each	1.0			
3.33	Providing and fixing C.P. brass laboratory cock swan neck heavy two way of approved model and make complete in all respect	Each	15.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
3.34	Providing & fixing solid state fully hygienic no touch hand drier of approved make rated for continuous repeat usage with solid state time delay LSF protection, with independent ambient light level & seasonal control temperatures including providing necessary C.I./M.S. brackets painted with two or three coats of enamel paint of approved shade over a coat of primer, wiring cables from drier to plug, plug tops etc. complete including cutting and making good the walls wherever required.	Each	17.0			
3.35	Supplying, fixing, testing and commissioning of storage type water heater (Geyser) etc. with Stainless steel body , copper container , automatic thermostatic control electric element, pressure release valve, M.S. nuts and bolts etc. conforming to IS: 2082					
a)	25 Litre Capacity	Each	56.0			
b)	35 litre capacity	Each	1.0			
3.36	Providing & fixing water storage cooler of approved make and brand with SS body Complete in respects.(VOLTAS/ BLUE-STAR/ USHA SHRIRAM)					
	minimum flow rate of 20 ltrs. Per hour and storage capacity 40 ltrs.	Each	14.0			
	minimum flow rate of 40 ltrs. Per hour and storage capacity 80 ltrs.	Each	11.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
3.37	Providing and fixing approved make & suitable model of R.O. plant 25 ltrs. Per hour flow rate having capacity to treat the raw water having TDS 1200 ppm and not less than 40%. The treated water should have TDS less than 100 ppm and hardness less than 50 ppm. The operating voltage to 230 volt AC +/- 10% alongwith required capacity pump and solenoid valves, dry run protection of pump, automatic tank level control, inbuilt auto flush timer for periodic flushing of membranes, hydro pneumatic tank, over voltage and over current protection with switch mode power supply system antiscaling dosing system complete in all respects including installation and fittings with the following provisions: (IONIEXCHANGE/ KENT/AQUAPROCESS/Pantair)					
a)	10 micron polypropylene sediment pre filter					
b)	10 micron bacteriostatic activated carbon block on line micron filter with 5 micron rating					
c)	3 Nos. of reverse osmosis memberane with 0.0001 micron pore size energy saving poly amide type					
d)	UV lamp of minimum capacity 25 LPM and minimum lamp wattage 9W	Each	25.0			
	SUB TOTAL(Water Supply)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
4.00	SEWARAGE & DRAINAGE					
4.01	Providing laying and jointing glazed stoneware pipes grade 'A' with stiff mixture of cement mortar in the pro-portion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete.					
a)	100 mm diameter	Metre	40.0			
4.02	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) all-round S.W. pipes including bed concrete as per standard design:					
a)	100 mm diameter S.W. pipe/RCC NP2	Metre	80.0			
b)	150 mm diameter S.W. pipe/RCC NP2	Metre	450.0			
c)	250 mm diameter S.W. pipe/RCC NP2	Metre	350.0			
4.03	Providing and laying cement concrete 1:5:10 (1 cement:5 coarse sand:10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design:					
a)	150 mm diameter S.W. pipe	Metre	150.0			
b)	250 mm diameter s.W. pipe	Metre	150.0			
4.04	Providing and fixing square-mouth S.W. gully trap grade 'A' complete with C.I. grating, brick masonry chamber with water tight C.I. cover with frame of 300x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design:.					
a)	150x100mm size P type					
a.i)	F.P.S. Bricks class designation 75	Each	25.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
4.05	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement:2 fine sand) including testing of joints etc. complete					
a)	150 mm dia R.C.c. pipe	Metre	600.0			
b)	250 mm dia R.C.C. pipe	Metre	500.0			
4.06	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand), R.C.C. top slab with 1:2:4 mix (1cement : 2 coarse sand : 4graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 (1cement : 4 coarse sand : 8graded stone aggregate 40 mm nominal size), inside plastering 12mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, and making necessary channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design.					
a)	Inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg):					
a i)	With F.P.S. bricks with class designation 75	Each	23.0			
4.07	Extra depth for manholes					
a)	Size 90 x 80 cm					
a i)	With F.P.S. bricks class designation 75	Metre	3.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
4.08	Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement: 3 coarse sand: 6 graded stone aggregate 40mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design:					
a)	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182kg., fixed in cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) including centering shuttering all complete. (Excavation, foot rests and 12mm thick cement plaster at the external surface shall be paid for separately) :					
a i)	With F.P.S. bricks class designation 75	Each	17.0			
4.09	Extra depth for circular type manhole 0.91m dia (at bottom) with beyond 0.91m to 1.67 m					
a)	With F.P.S. bricks class designation 75	Metre	2.5			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
4.10	Constructing brick masonry circular manhole 1.22 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement: 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 mix (1 cement :3 coarse sand : 6 graded stone aggregate 40mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement :2 coarse sand : 4 graded stone aggregate 20mm nominalsize) finished with a floating coat of neat cement complete as per standard design.					
a)	1.68 m deep with SFRC cover and frame(heavy duty HD-20 grade designation) 560 mm internal diameter conforming to IS: 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement :2 coarse sand : 4 graded stone aggregate 20mm nominalsize) including centering shuttering all complete. (Excavation, foot rests and 12 mm tick cement plaster at the external surface shall be paid for separately)					
a.i)	With F.P.S. bricks with class designation 75	Each	4.0			
4.11	Extra depth for circular type manhole 1.22 m internal dia (at bottom) with beyond 1.68 m to 2.29 m					
a)	With F.P.S. bricks with class designation 75	Metre	1.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
4.12	Providing and fixing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS: 10910 on 12 mm dia steel bar conforming to IS: 1786 having minimum cross section as 23 mm x 25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	350.0			
4.13	Making connection of drain or sewer line with existing manhole including breking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cemnet mortar 1:3 (1 cement:3 coarse sand) finished with a floating coat of neat cement and making necessary channels for the drain etc. complete (including obtaining approval from DJB/Municipal corporation					
a)	For pipes 100 to 230 mm dia	Each	3.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
4.14	Providing sand cast iron drop connection externally for 60 cm drop from branch sewer line to main sewer manhole including inspection and cleaning eye with chain and lid sand cast Iron drop pipe and bend encased all-round with cement concrete 1 :5:1 0 (1 cenment:5 fine sand: 10 graded stone aggregate 40 mm nominal size) with all centering and shuttering required, cutting holes in walls and making good with brick work in cement mortar 1:4 (1 cement: 4 coarse sand) plastered with cement mortar 1:3 (1 cement: 3 coarse sand) on, inside of the manhole wall lead caulked joints between sand cast iron pipes and fittings, stiff cement mortar 1:1 (1 cement: 1 fine sand) joints between sand cast iron tee and S.W. pipe, making required channels complete as per standard design and specifications:					
a)	150 mm dia. sand cast iron drop connection	Each	3.0			
4.15	Constructing brick masonry road gully chamber 50x45x60 cm with bricks of class designation 75 in cement mortar 1:4 (1 cement:4 coarse sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame complete as per standard design:					
a)	With F.P.S. bricks	Each	120.0			
4.16	Providing and fixing S.W.intercepting trap in manholes with stiff mixture of cement mortar 1:1 (1 cement:1 fine sand) including testing of joints etc. complete					
a)	150 mm dia	Each	3.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
4.17	Constructing brick masonry open surface drain including factory made perforated RCC cover with edge protected with MS plate of 3 mm thick with bricks of class designation 75 in cement mortar 1:4 (1 cement : 4 fine sand) including earth excavation, 10cm thick bed concrete 1:5:10 (1 cement: 5 fine sand :10 graded stone aggregate 40mm nominal size) and 25mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) for filling hunches including 12mm cement plaster 1:4 (1 cement:4 coarse sand) with a floating coat of neat cement inside the drain, its top and exposed side including disposal of surplus earth complete as per standard design.					
	25cm drain 30cm average depth					
a)	With F.P.S bricks	Metre	250.0			
	45cm drain 75cm average depth					
b)	With F.P.S bricks	Metre	350.0			
SUB TOTAL(SEWERAGE AND DRAINAGE)						

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
5.00	EARTH WORK					
5.01	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth,1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50 m and lift up to 1.5 m , disposed earth to be levelled and neatly dressed.					
a)	All kinds of soil	cum	90.0			
5.02	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth up to 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m:					
a)	All kinds of soil					
a.ii)	Pipes, cables etc. exceeding 80 mm dia but not exceeding 300 mm dia	metre	1100.0			
5.03	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m					
		cum	35.0			
	SUB TOTAL(EARTH WORK)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
6.00	EXTERNAL WATER SUPPLY					
6.01	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth up to 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m:					
a)	All kinds of soil					
a.ii)	Pipes, cables etc, exceeding 80 mm dia but not exceeding 300 mm dia	metre	1500.0			
6.02	Providing and fixing gun metal gate valve with CI wheel of approve quality (screwed end)					
a)	80 mm dia nominal bore	each	4.0			
6.03	Providing and fixing gun metal non-return valve of approved quality (screwed end)					
a)	65 mm nominal bore					
a.i)	Horizontal	each	2.0			
b)	80 mm nominal bore					
b.i)	Horizontal	each	2.0			
6.04	Providing and fixing C.I. sluice valves (with cap) complete with bolts, nuts, rubber insertions etc. (the tail pieces if required will be paid separately):					
a)	100 mm diameter					
a.i)	Class I	each	6.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
6.05	Constructing masonry chamber 60x60x75 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for sluice valve, with C.I. surface box 100mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design					
a)	With F.P.S. bricks	each	2.0			
6.06	Constructing masonry chamber 90x90x100 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for sluice valve, with C.I. surface box 100mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design					
a)	With F.P.S.bricks	each	4.0			
6.07	Providing and fixing G.I. Union in existing G.I. pipe line, cutting and threading the pipe and making long screws including excavation, refilling the earth or cutting of wall and making good the same complete wherever required:					
a)	50 mm nominal bore	each	2.0			
b)	65 mm nominal bore	each	2.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
c)	80 mm nominal bore	each	1.0			
6.08	Providing and fixing C.I. double acting air valve of approved quality with bolts, nuts, rubber insertions etc. complete (The tail pieces, tapers etc. if required will be paid separately):					
a)	50 mm dia	each	2.0			
b)	80 mm dia	each	2.0			
6.09	Providing and laying D.I. specials of class k-12 suitable for push-on jointing as per IS:9523					
a)	Upto 600 mm dia	quintal	45.0			
6.10	Providing push-on-joints to Centrifugally (Spun) Cast Iron pipes or Ductile Iron Pipes including testing of joints and including the cost of rubber gasket					
a)	100 mm dia pipes	joint	600.0			
6.11	Providing and laying S&S Centrifugally Cast (Spun)/Ductile Iron pipes confirming to is:8329:					
a)	100 MM DIA Ductile Iron Class k-7 pipes	metre	1500.0			
6.12	Disinfecting C.I./D.I. water mains by flushing with water containing bleaching powder at 0.5 gms per litre of water and cleaning the same with freash water, operation to be reaeated three times including getting the sample of water from the disinfected main tested in the municipal laboratory					
a)	100 mm diameter C.I./D.I. pipe	metre	15.0			
6.13	Providing and fixing G.I. pipes complete with G.I. fittings and clamp including cutting and making good the walls etc.					
	Internal work-Exposed on wall					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	65 mm diameter	metre	10.0			
	80 mm diameter	metre	10.0			
	100 mm diameter	metre	20.0			
6.14	Providing and fixing puddle flanged including 40 cm long GI pipe piece welded/threaded with MS plates 450x450x6 mm thick with both end screwed/flanged.					
	For 80 mm dia pipe	Each	2.0			
	For 100 mm dia pipe	Each	4.0			
6.15	Providing and fixing suitable G.I. vent pipe upto 1m high Class-B (medium quality) with fittings complete as per drawing and as directed.					
	For 80 mm dia pipe	Each	4.0			
	100mm Dia	Each	2.0			
6.16	Providing and fixing double seal type D.I. Manhole cover of 560 mm clear internal diameter of over all heavy duty with locking arrangement complete in all respects.	Each	6.0			
6.17	Providing all materials and labour for supplying and fixing multi-level indicator cum controller, operating in electronic sensing probe and having the controller equipped with level monitoring system and phase monitoring system for automatic operations of various pumps and indicating water levels for various tanks and having multi-level 4 nos. visual indications on panel with alarm system and timer including necessary cable and acknowledge facilities as per requirement and all complete as approved.					
	Water tanks					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	controller/Multilevel indicators					
	Electronic sensing probe to cut-off raw water pumps at low level in raw water tank.					
	Electronic sensing probe to cut-off pumps at high level in receiving tanks.	set	4.0			
6.18	Providing and fixing gun metal foot valve with stainer of approved quality/model complete in all respect					
	80 mm dia	each	2.0			
	100 mm dia	each	2.0			
SUBTOTAL (EXTERNAL WATER SUPPLY)						

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
7.00	EXTERNAL WATER SUPPLY(for use of recycling of STP treated water for horticulture)					
7.01	Providing and fixing C.I. sluice valves (with cap) complete with bolts, nuts, rubber insertions etc. (the tail pieces if required will be paid separately):					
a)	100 mm diameter					
a.i)	Class I	each	6.0			
b)	150 mm diameter					
b.i)	Class I	each	2.0			
7.02	Constructing masonry chamber 90x90x100 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for sluice valve, with C.I. surface box 100mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design					
a)	With F.P.S.bricks	each	6.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
7.03	Constructing masonry chamber 120x120x100 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for sluice valve, with C.I. surface box 100mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design					
a)	With F.P.S.bricks	each	4.0			
7.04	Providing and fixing C.I. double acting air valve of approved quality with bolts, nuts, rubber insertions etc. complete (The tail pieces, tapers etc. if required will be paid separately):					
a)	80 mm dia	each	4.0			
7.05	Providing and fixing C.I. dirt box strainer for bulk type water meter with nuts, bolts, rubber insertions etc. complete conforming to IS:2373					
a)	100 mm dia	each	2.0			
a)	150 mm dia	each	2.0			
7.06	Providing and laying D.I. specials of class k-12 suitable for push-on jointing as per IS:9523					
a)	Upto 600 mm dia	quintal	52.5			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
7.07	Providing push-on-joints to Centrifugally (Spun) Cast Iron pipes or Ductile Iron Pipes including testing of joints and including the cost of rubber gasket					
a)	100 mm dia pipes	joint	205.0			
b)	150 mm dia pipes	joint	355.0			
7.08	Providing and laying S&S Centrifugally Cast (Spun)/Ductile Iron pipes conforming to is:8329:					
a)	100 mm dia Ductile Iron Class k-7 pipes	metre	475.0			
b)	150 mm dia Ductile Iron Class k-7 pipes	metre	825.0			
7.09	Disinfecting C.I./D.I. water mains by flushing with water containing bleaching powder at 0.5 gms per litre of water and cleaning the same with fresh water, operation to be repeated three times including getting the sample of water from the disinfected main tested in the municipal laboratory					
a)	100 mm diameter C.I./D.I. pipe	100	4.8			
b)	150 mm diameter C.I./D.I. pipe	100	8.3			
7.10	Providing and fixing G.I.pipes complete with G.I. fittings including trenching and refilling etc. (External work)					
a)	20 mm dia nominal bore	metre	50.0			
7.11	Providing and fixing puddle flanged including 60 cm long GI pipe piece welded/threaded with MS plates 450x450x6 mm thick with both end screwed/flanged.					
a)	For 100 mm dia pipe	Each	2.0			
b)	For 150 mm dia pipe	Each	2.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
7.12	Providing and fixing double seal type D.I. Manhole cover of 560 mm clear internal diameter of over all heavy duty with locking arrangement complete in all respects.	Each	4.0			
7.13	Providing and fixing garden hydrant with 20 mm outlet complete with bolts,nuts and rubber insertion etc.	each	20.0			
SUBTOTAL (EXTERNAL WATER SUPPLY)						

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
8.00	RAIN WATER PIPING					
8.01	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams	Each	36.0			
8.02	Providing and fixing rain water ,soil, waste and vent pipes.					
a)	100 mm dia.					
a i)	Centrifugally cast (spun) iron socketed pipe as per IS:3989	Metre	450.0			
c)	150 mm dia pipe as per IS:3989	Metre	310.0			
8.03	Providing and fixing M.S holder-bat clamps of approved design to Sand Cast iron/ cast iron (spun) pipe embedded in and including cement concrete blocks 10x10x10 cm of 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) including cost of cutting holes and making good the walls etc.					
a)	for 100 mm dia. pipe	Each	120.0			
c)	for 150 mm dia pipe	Each	85.0			
8.04	Providing and fixing plain bend of required degree.					
a)	100 mm					
a ii)	Sand cast iron S&S as per IS:3989	Each	21.0			
c)	150 mm	Each	15.0			
8.05	Providing and fixing heel rest sanitary bend.					
a)	100 mm dia					
a.ii)	sand cast iron S&S as per IS-3989	Each	21.0			
c)	150 mm dia	Each	15.0			
8.06	Providing and fixing collar					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
a)	100 mm					
a.ii)	Sand cast iron S&S as per IS-3989	Each	40.0			
c)	150 mm	Each	27.0			
8.07	Providing lead caulked joints to sand cast iron /centrifugally cast (spun) iron pipes and fittings of diameter:					
a)	100 mm	Each	155.0			
c)	150 mm	Each	125.0			
8.08	Painting sand cast iron / centrifugally cast (spun) iron soil, waste vent pipes and fittings with paint of any colour such as chocolate, grey, or buff etc. over a coat of primer (of approved quality) for new work:					
a)	100 mm diameter pipe	Metre	450.0			
c)	150 mm diameter pipe	Metre	310.0			
SUB TOTAL(Rain Water pipe & fitting)						

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
9.00	BOREWELL(1 No)					
9.01	Drilling by suitable rig as per IS : 2800-1979 (percussion or combination rig) or Reverse Rotary to suit site condition from ground level in all kind of soils and weathered rock including boulders (excluding rock) diameter of bore 450mm including carry out hydrological survey report before boring & getting the approval based on Hydrogeological survey before start of the work.Also getting approval from local authority if any required					
a)	0-30m	metre	30.0			
b)	30-60m	metre	30.0			
c)	60-90m	metre	30.0			
d)	90-120 m	metre	30.0			
9.02	Extra additional for drilling in Ordinary Rock if any found	metre	25.0			
9.03	Extra additional for drilling in Hard Rock if any found	metre	25.0			
9.04	Providing and lowering uPVC casing/housing pipe 200mm dia. with wall thickness 10 mm conforming to IS :12818 including sockets of standard design.	metre	70.0			
9.05	Providing & fixing uPVC screen/slotted pipe with 1.5 mm to 3mm (slots as per strata condition) including sockets of standard design as per IS: 12818/1992.					
a)	200 mm dia uPVC socketed pipe with wall thickness 10.0 mm	metre	80.0			
9.06	Providing and fixing in position threaded iron cap with locking arrangement of approved design to prevent foreign matters getting into the bore-hole as required.	Each	1.0			
9.07	Providing and laying rounded pea gravel washed & served 3 to 6 mm nominal boreas per relevant ISI code.	Cum	16.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
9.08	Providing and laying cement concrete 1:2:4 mix for sanitary sealing of well at top.	Cum	1.0			
9.09	Supplying, lowering and fixing in position reducer ,PVC bail plug with "U" hooks as per IS:2800-1964.	Each	1.0			
9.10	Development of Tubewell including testing of yield depression & quality of water (for all parameters of potable water), contractor to obtain certificate for quality for water from Competent Authority approved by client or Engineer- In -Charge.					
a)	Development of Tube well by high capacity air compressor till the clear water discharge but not more than 100 hours.	per hour	80.0			
b)	Additional development of Tube well by high an over pumping unit till complete development of tube well does not clear by maximum 100 hours air compressor	per hour	50.0			
9.11	Tranportation, mobilisation and demobilisation or drilling equipment and ancillary equipment to site including clearing and cleaning the site after completion of work.	set	1.0			
9.12	Providing and fixing brass full way valve with C.I. wheel of approved make, tested to a pressure of 21 kg/sqcm.					
a)	100 mm dia	Each	1.0			
9.13	Providing and fixing gunmetal non return valve of approved make tested to a pressure of 21kg/sqcm.					
a)	100 mm dia	Each	1.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
9.14	Providing & fixing G.I. pipes (heavy class)confirming to IS with special fittings in external works including earthwork ,excavationin all kinds of soil including ordinary rock,refilling, painting pipes & fitting complete in all respects. 100 mm dia	Metre	100.0			
9.15	Providing & filling sand of grading zone V or coarser grade all around GI pipe in external work 100 mm dia	Metre	100.0			
9.16	Submersible pumps Providing and installing submersible pump and electrical panel suitable for 8" dia casing of bore with SS impeller, high tensile SS shaft, copper wound squirrel cage wet type induction motor 2880 rpm, 415 V, 50 Hz,3 phase A.C. supply, conforming to ISS: 8034-1976, capacity 500 litre per minute at 70-120 m head/ or suitable as per the hydrological survey report along with a directly coupled submersible type squirrel cage electric induction 5 H.P(minimum) . motor suitable for operation on 400 V, 3 phase, 50 c.p.s. A.C. supply, water lubricated bearings and provided with pivoted segment type thrust bearings to withstand non-vertical lead with minimum wear and tear and duly fitted with device to take up the expansion of water with heating of motor, including supply, testing and commissioning of elctrical panel from the same manufacturer, complete with all accessories in all respects. The contractor to obtain approval for model and make of pumpset & suitable Electrical panel after having yield report of fully developed tube well and submite actual bore strata chart. including supplying laying and fixing water proof PVC insulated flat submersible cable 3x10 sqmm with end termination with its accessories. complete in all respect as required.	set	1.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
9.17	Carrying out Electrical logging of Borewell before lowering of pipe for analysiing of water quality including Electrical logging report, calculation etc.	Job	1.0			
	SUBTOTAL (BOREWELL)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
10.00	RAIN WATER HARVESTING(4 NOS.)					
10.01	Designing and Constructing of percolation pit cum perforated well 3000mm. dia upto 4000mm deep, 230 mm thick brick masonry work alround upto 1.5 m deep with 75 class brick in cement mortar 1:4, 200 mm foundation concrete in 1:4:8 mix below brick work only, 150 mm thick precast removable RCC top slab with required steel reinforcement in cement concrete 1:2:4 mix, filled with coarse aggregate, SFRC covers, river pebbles of requisite size stone as shown in the drawing including centering and shuttering, as shown complete as per detailed drawings complete.	Each	4.0			
10.02	Drilling as per IS : 2800-1964 (with percussion or combination rig) from ground level in all kind of soils including boulders (excluding rock) diameter of bore 450mm.					
a)	0-50m	Metre	120.0			
10.03	Extra for drilling in Ordinary Rock	Metre	20.0			
10.04	Extra for drilling in Hard Rock	Metre	20.0			
10.05	Providing and lowering of 200 mm dia uPVC blank/ slotted pipe with ribs, special fittings, jointing conforming to IS 12818 - 1992.	Metre	120.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
10.06	Constructing bar screen / settling tank, of sizes 4500x2500 with suitable depth up to 2.0 m in 1: 4 Cement Mortar (one cement : 4 coarse sand) height as per site requirement, in brick masonry 350mm thick walls upto water level and 230mm thick walls above water level & upto ground level, including all excavation, 20 cm thick bed concrete in 1:4:8 (one cement 4 fine sand 8 stone aggregate 40 mm), cement plaster 1:3 (one cement :3 coarse sand) with a floating coat of neat cement as inside finish , top slab in RCC 1:2:4, including centring, shuttering and steel work, also providing and fixing D.I. manhole cover & frame of size 605mm x 450mm of weight not less than 38 kg (frame + cover) and cost of 100mm dia C.I. vent pipe with C.I. Ventilating Cowl and suitable wire mesh provision for inlet, 115mm baffle walls extending 2/3 the width spaced@500mm c/c including finishing with 1:3 cement plaster 15mm thick with floating coat of neat cement slurry , all complete in every respect as per drawing and as directed to suit site condition.	Each	4.0			
SUBTOTAL (RAIN WATER HARVESTING)						

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
11.00	SOLAR WATER HEATING SYSTEM & RECIRCULATION OF HOT WATER SYSTEM (1 Nos)					
11.01	Supply, installation, testing and commissioning of solar water heating system, Thermosyphon type, all complete based on Flat plat collector system (Cu-Cu Type only) comprising of but not limited to the following:					
a)	Requisite number of Flat plate collectors of 2 sq. mtr. collector area. Collector absorber plate to be made of copper tubes & copper fins only					
b)	Hot water storage tank made of stainless steel 304- food grade quality with 100 mm Glass wool insulation and cladding with 24 SWG Aluminum sheet. One temperature measuring device and suitable inlet, outlet and drain connections on the storage tank to be provided. Suitable Electrical Heater backup to be provided inside the tank along with thermostat					
c)	Heat Exchanger - Cage type Internal Heat Exchanger made of SS pipes shall be provided inside the Solar Tank. Heat exchangers shall have min. heat transfer area of 0.24 sq. mtrs. for every 100 LPD calacity. Suitable make up tank for the Heat Exchanger circuit shall also be provided					
d)	Interconnecting system piping shall consist of B Class insulated GI pipes covered with 50mm thick glasswool & clad with 26 SWG Aluminium Sheet. All Gate/Ball valves shall be of ISI make.					
e)	Electrical control panel, cabling from panel to pumps and electrical heaters shall also be provided					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
f)	The solar collector shall be arranged on roof of building in such a way that shadow can be avoided and requisite number of MS support for collector/tanks of minimum 35x35x5 MS angle adequate for 150 Km/Hr wind speed.					
g)	Solar water heating system based on Flat plat collector system technology with output capacity of as mentioned below with hot water at 60 degree centigrade having required Nos. solar collectors as per complete item as per technical specification of make BHEL/TATA/EMMVEE. The system has to be installed by Manufacturers authorised distributors/approved specialised firms of Solar water heating of approved makeThe shop drawing of the systems shall be provided by the agency as per site condition obtain the proper efficiency The system shall be procured after obtaining the approval of shop drawings from HSCC / Engineer-in-charge.(Electric heating element shall not be provided in the system as the solar hot water system will supply the hot water to the individual geyser).					
	Solar System of Capcity 1500 Litre/day (With minimum 12 nos of Collector of 2.0 Sqm area each)	each	2.0			
i)	Solar System of Capcity 2000 Litre/day (With minimum 16 nos of Collector of 2.0 Sqm area each)	each	3.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
11.02	Recirculation system (on return line) -Designing, Supply, Installation, Commissioning & Integration with Solar System of Recirculation System consisting of - Insulated Auxiliary Tank SS with epoxy paints (2 times the solar piping system volume) and with Electrical Backup, Pump, of requisite capacity DTC, Sensor PT100, Control Panel wiring,RS 485 mod bus communication port for BMS as per technical specification, MS standand etc. (but does not include the return piping & fitting)	each	4.0			
11.03	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
	Internal work- Exposed on wall					
a)	15 mm nominal outer dia pipes (SDR-11)	metre	150.0			
b)	20 mm nominal outer dia pipes (SDR-11)	metre	250.0			
c)	25 mm nominal outer dia pipes (SDR-11)	metre	175.0			
d)	32 mm nominal outer dia pipes (SDR-11)	metre	150.0			
e)	40 mm nominal outer dia pipes (SDR-11)	metre	75.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
11.04	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
	Concealed work including cutting chases and making good the walls etc.					
a)	15 mm nominal outer dia pipes (SDR-11)	metre	250.0			
b)	20 mm nominal outer dia pipes (SDR-11)	metre	175.0			
11.05	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end):					
a)	25 mm nominal bore	each	17.0			
b)	32 mm nominal bore	each	12.0			
c)	40 mm nominal bore	each	10.0			
11.06	Providing & fixing 9 mm thick thermal insulation tubing of elastomeric flexible material having hermetic blistered closed cell structure of expanded synthetic rubber over pipes/ fitting as per manufacturer's specifications etc.complete.					
a)	15 mm dia to 25 mm dia	each	1000.0			
b)	32 mm dia to 50 mm dia	each	225.0			
11.07	Providing and fixing gun metal ball valve of approved quality					
a)	15 mm nominal bore	each	17.0			
b)	20 mm nominal bore	each	12.0			
	SUBTOTAL(SOLAR WATER HEATING SYSTEM & RECIRCULATING SYSTEM)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
12.00	WATER TREATMENT PLANT					
12.01	WATER TREATMENT PLANT (/Domestic use)					
	Planning, Designing, Detailing, Manufacturing, Supplying, Erection, Testing and Commissioning of Water treatment plant for supply of treated water for use of domestic purpose comprising of filter and pumps. The plant is to be installed in pump room and Raw water supply is available in UGT including design and execution of all Civil, Structural, Electrical, Mechanical, Plumbing and processing, ancillary equipments & works etc required to complete the package, getting approval from HSCC/client etc.					
	The shop drawings & design of WTP shall also be prepared in such a way that it comprise of the following units of required size as per detail design requirements. The work has to be carried through authorised vendor, dealer/representative of approved make (Ion exchange, Pollucon technologies, AKAR Impex,Thermax, Aquaprocess, Fontus).					
i)	Providing and fixing vertical/ multi-stage inline centrifugal raw water filter feed pumps mounting on a foundation with CI volute and SS impellar and with stainless steel shaft, mechanical seal and chrome steel shaft sleeve, connected to a TEFC induction motor suitable for 400/440 volts,1500 RPM, 3 phase 50 cycles A.C. supply having IP 55 protection enclosure. complete with base frame, vibration eliminating pads, nuts and bolts etc. (Necessary RCC foundations as per requirement and as per instructions shall be provided by the agency)					
	Raw water (filter) feed pumps.					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Capacity : 120 lpm (Each)					
	Head 35 m					
	Power :2.0 HP or as required					
	1 working					
ii)	Providing and fixing C.I. "Y" Type suction strainer with stainless steel perforated sheet screen,flanged ends inner installed outside water tanks. (Make: Leader / Zoloto / Kartar or equivalent)					
	65/80 mm dia (4 nos.) (min.) or required size and required number					
iii)	Providing and fixing gun metal or bronze ball valves/butterfly valve/NRV/Rotameter, tested to 15.00 Kg / cm ² , screwed end connections complete . (Make: Leader/ Zoloto or equivalent)					
	40/65 mm NB (min.) or required size and number					
iv)	Filtration Plant : Vertical Downflow Multigrade Pressure Sand Filter in MS Welded construction fabricated in accordance with IS 2825 from minimum 6 mm thick M.S. plate on shell and minimum 8 mm thick M.S. plate on dished ends as per applicable IS standards. The filter shall have :					
	a) One no pressure tight manhole and at least one no. pressure tight side hole for maintenance purposes.					
	b) Initial charge of Filter Media.					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	c) Complete underdrain system and raw water distributor as per manufacturer's design.					
	d) M.S. heavy class fabricated - epoxy coated / post galvanised face piping comprising of connections with CI Butterfly Valves of required size for inlet, outlet, backwash inlet, backwash drain and rinse drain. Air release line with GM Ball Valve of required size.					
	e) Pressure gauges (100 mm dia bourdon type pressure gauge) / Sampling points with SS isolation cocks at inlet and outlet.					
	f) All internal parts of the filtration plant shall be coated with 6 mm thick natural rubber lining after thorough sand blasting. All external surfaces of the plant including piping shall be coated with two coats of epoxy paint and primer .					
	g) The filter shall be complete with all gaskets / fasteners of standard quality as required.					
	h) The filter shall be designed to give rated output at given raw water quality and flow rate without any operational problem and should not get any loss of performance as long as the operating pressure remains within the given range. Any additional provision is required to make the item complete, the same should be included herein. The work has to be carried through authorised vendor, dealer/representative of approved make (Ion exchange, Pollucon technologies, AKAR Impex, Thermax, Aquaprocess, Fontus). The filter water will be supplied to treated water tank through U.V. water steriliser					
	Capacity - 120lpm					
	Filtration rate - 20,000 lph/sqm (min.)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Filter dia approx.-700 mm (min.)					
	Filter HOS Min. : 1600 mm (min.)					
	Working pressure : 3.0 Kg/sq cm.					
	Test pressure : 4.5 Kg/sq cm					
	No. of Filters : 1 working					
v)	UV WATER STERILISERS					
	High performance on line UV water sterilisers of capacity 12000 lph designed on at least 250 J/Sq. M. UV dosage, comprising of glass UV chamber in SS 316 housing, UV lamp and electrical circuit, wall mounted model / line mounted model, capacity 500lpm, minimum lamp rating :120 watts - 1Nos.					
vi)	Providing and fixing G.I.pipes/CPVC pipes to I.S. 3589/1239 (Heavy class) with G.I./CPVC Fittings e.g., Tee, elbow reducers, unions, end cap etc., flanges & clamps, including supporting the pipes with G.I. supports, cutting and making good the walls etc. complete. For Suction & Delivery headers.					
	40/65 mm dia (min.) (Interconnection between units)/ Drain lines etc. as per plant room requirement. (All piping and fitting of required size inside the plant room included in the item)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
vii)	Painting G.I./CPVC pipes with two or more coats of synthetic enamel paint of approved quality and shade over a coat of approved priming coat as directed by the Project-in-charge (shade as per pipe colour code).					
	40/50 mm dia (min.) (as per required length)					
	Complete W.T.P as mentioned above including testing, training and trial run till comissioning of W.T.P. set	Job	1.0			
12.02	STRUCTURAL STEEL WORK					
i)	Supply, fabrication, erection, painting of pipe supports of structural steel, for piping work in the production areas and anchoring them. 2 coats of zinc chromate primer and one coat of finishing paint.	Kgs.	150.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
12.03	Supplying, assembly, erection, testing and commissioning of level controllers based on level switches and necessary auxillary circuits included in the electric panel ,including all accessories required for the performance of the system to the satisfaction of the engineer in charge complete including providing and fixing wiring from control panel to the level switches of required size,all interconnections as required . Note : The required transformers / associated equipment shall be designed keeping in view the actual distance of various tanks from the control panel, particularly the distance of OH soft water tank from panel. The most suitable route of sensor cable travel between the panel and the tank shall have to be worked out by the contractor according to site conditions and in consultation with engineer in charge. All cabling / switch installation should be done in an easy to maintain manner.					
i)	One way one tank level controller as under.					
	To switch on the tube well pump when the level of water in the UG raw water tank is low and to cut off the pump when the level in the underground raw water tank is high. (Approx. control cable requirement - 200 meters.)	Set	1.0			
	Two way - Two tank level controller as under.					
ii)	For Filter Feed Pumps for domestic water.(Operating between the Under ground Raw water tank and the under ground treated water tank near the plant room. (Approx. control cable requirement - 50 meters.)	Set	1.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
iii)	For Treated water supply Pumps(Operating between the under ground treated water tank near the plant room and the Terrace treated water tank . (Approx. control cable requirement - 125 meters.)	Set	1.0			
iv)	For Raw water supply Pumps(Operating between the under ground Raw water tank near the plant room and the Terrace Raw water tank . (Approx. control cable requirement - 125 meters.)	Set	1.0			
v)	For soft water supply Pumps(Operating between the under ground soft water tank near the plant room and the Terrace soft water tank .(Approx. control cable requirement - 125 meters.)	Set	1.0			
12.04	Providing and fixing gun metal foot valve with stainer of approved quality/model complete in all respect.					
	50 mm dia	each	2.0			
	80 mm dia	each	2.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
12.05	Supplying, installing, testing and commissioning vertical online/horizontal centrifugal pumping set with mechanical seal, C.I. volute and SS impeller & SS shaft connected to a TEFC induction motor of suitable HP for 415 volts, 3 phase, 50 cycles A.C. supply with 150 mm dia pressure gauge with gunmetal isolation cock, vibration eliminating pads, base plate wiring upto panel and equipment for water level controller to start and stop the pump automatically at predecided levels of the water in the tank with provision of protection for dry run etc. complete in all respect including Y-strainer (The shop drawing or the pumps along with its characteristics curves, model and technical data etc. are to be submitted for approval before purchase of pump).					
	Domestic water pumps (Treated water transfer&Raw water Transfer pump to terrace tank)					
	Treated water/Raw water transfer pump to terrace tank					
	Capacity 200 lpm					
	Head 60M	Each	4.0			
	Soft water transfer pump					
	Capacity 50 lpm					
	Head 35M	Each	2.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
12.06	Supply, installing, testing and commissioning vertical fully floodable type submersible drainage pump in close coupled design single stage, suitable for handling minimum 12 mm dia solids for transferring waste water from sump to outside the building with float switch for automatic start and stop arrangement with panel and wiring, chain and pulley, mechanical seal complete in all respect as per instruction of the Engineer in charge . (The shop drawing or the pumps along with its characteristics curves, model and technical data etc. are to be submitted for approval before purchase of pump).					
	Material of Construction (M.O.C): Corrosion Resistant in general					
	: Casing — Cast Iron					
	: Impeller — Stainless Steel					
	: Shaft — Stainless Steel					
	: Bearings — Anti friction, prelubricated ball bearings, packed with grease for life.					
	Motor: — Dry Motor with built in over load protection Protection - IP68.					
	Duty of each pump					
	150 LPM against 12 M head	each	6.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	250 LPM against 14 M head	each	8.0			
12.07	Supply, installing, testing and commissioning vertical fully floodable type submersible drainage pump of non-corrosive material with shredder/cutter in close coupled design single stage, suitable for handling minimum 20 mm dia solids for transferring raw sewer from sump to outside the building with float switch for automatic start and stop arrangement with panel and wiring, chain and pulley, mechanical seal complete in all respect as per instruction of the Engineer in charge. (The shop drawing or the pumps along with its characteristics curves, model and technical data etc. are to be submitted for approval before purchase of pump).					
	Material of Construction (M.O.C): Corrosion Resistant in general : Casing — Cast Iron					
	: Impeller — Stainless Steel					
	: Shaft — Stainless Steel					
	: Bearings — Anti friction, prelubricated ball bearings,					
	Motor: — Dry Motor with built in over load protection					
	Protection - IP68.					
	Insulation Class - F					
	Duty of each pump					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	50 LPM against 12 M head (Basement)	Each	4.0			
12.08	Testing Underground tank for water seepage before fixing of tiles or any other finishing including pressure grouting (if required). The tank should be disinfected and cleaned before use as per instruction of Engineer-in-charge(up to 3 lac ltr capacity of each compartment of tank)	set	1.0			
12.09	SOFT WATER TREATMENT PLANT (1 Nos)					
	WATER TREATMENT PLANT (Soft water)					
	Planning, Designing, Detailing, Manufacturing, Supplying, Erection, Testing and Commissioning of Water treatment plant for supply of treated water for use in Air conditioning and filter water for domestic purpose comprising of filter and pumps. The plant is to be installed in pump room at basement level and Raw water supply is available in UGT including design and execution of all Civil, Structural, Electrical, Mechanical, Plumbing and processing, ancillary equipments & works etc required to complete the package, getting approval from HSCC/client etc.					
	The shop drawings & design of WTP shall also be prepared in such a way that it comprise of the following units of required size as per detail design requirements. The work has to be carried through authorised vendor, dealer/representative of approved make (Ion exchange, Pollucon technologies, AKAR Impex,Thermax, Aquaprocess, Fontus).					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Providing and fixing horizontal/ vertical on line single/multi-stage raw water filter feed pumps mounting on a foundation with CI volute and SS impellar and with stainless steel shaft, mechanical seal and chrome steel shaft sleeve, connected to a TEFC induction motor suitable for 400/440 volts, 1500 RPM,3 phase 50 cycles A.C. supply having IP 55 protection enclosure. complete with base frame, vibration eliminating pads, nuts and bolts etc. (Necessary RCC foundations as per requirement and as per instructions shall be provided by the agency)					
	Raw water (filter) feed pumps.(Filter before softner)					
	Capacity : 50LPM					
	Head 35 m					
	Power : 1.0HP or as required					
	1 working					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Providing and fixing GI/CPVC epoxy coated pipe & fittings and specials for suction and discharge side of pumps as required to connect Suction strainers and isolation butterfly valves on suction side and isolation valves and NRVs on discharge size , and to make a common discharge header from 2 pumps. Individual pump suction and discharge size minimum : 50 mm x 40 mm. The pumps shall have 80 mm NB butterfly valves and 80 mm NB flanged Y type strainers on suction side and common discharge header size : 50 mm NB including required numbers of matching flange, bolts, nuts, rubber gaskets, all complete as required / as per drawings or specifications. (complete lot)					
	Providing and fixing C.I. "Y" Type suction strainer with stainless steel perforated sheet screen,flanged ends inner installed outside water tanks. (Make: Leader / Zoloto / Kartar or equivalent)					
	65/80 mm dia (4 nos.) (min.) or required size and required number					
	Providing and fixing G / M or bronze ball valves/butterfly valve/NRV/Rotameter, tested to 15.00 Kg / cm ² , screwed end connections complete . (Make: Leader/ Zoloto or equivalent)					
	40/65 mm NB (min.) or required size and number					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Filtration Plant : Vertical Downflow Multigrade Pressure Sand Filter in MS Welded construction fabricated in accordance with IS 2825 from minimum 6 mm thick M.S. plate on shell and minimum 8 mm thick M.S. plate on dished ends as per applicable IS standards. The filter shall have :					
	a) One no pressure tight manhole and at least one no. pressure tight side hole for maintenance purposes.					
	b) Initial charge of Filter Media.					
	c) Complete underdrain system and raw water distributor as per manufacturer's design.					
	d) M.S. heavy class fabricated - epoxy coated / post galvanised face piping comprising of connections with CI Butterfly Valves of required size for inlet, outlet, backwash inlet, backwash drain and rinse drain. Air release line with GM Ball Valve of required size.					
	e) Pressure gauges (100 mm dia bourdon type pressure gauge) / Sampling points with SS isolation cocks at inlet and outlet.					
	f) All internal parts of the filtration plant shall be coated 6 mm thick natural rubber lining after thorough sand blasting. All external surfaces of the plant including piping shall be coated with epoxy primer followed by two coats of high gloss epoxy paint .					
	g) The filter shall be complete with all gaskets / fasteners of standard quality as required.					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	h) The filter shall be designed to give rated output at given raw water quality and flow rate without any operational problem and should not get any loss of performance as long as the operating pressure remains within the given range. Any additional provision is required to make the item complete, the same should be included herein. The work has to be carried through authorised vendor, dealer/representative of approved make (Ion exchange, Pollucon technologies, AKAR Impex, Thermax, Aquaprocess, Fontus). The filter water will be supplied to soft water tank through Softner.					
	Capacity - 50 LPM					
	Filtration rate - 20,000 lph/sqm (min.)					
	Filter dia approx. 500 mm (min.)					
	Filter HOS Min. : 1600 mm (min.)					
	Working pressure : 3.0 Kg/sq cm.					
	Test pressure : 4.5 Kg/sq cm					
	No. of Filters :One working					
	Providing and fixing, testing and commissioning M.S. Vertical Upflow "Cation" Ion Exchange water Softener fabricated in accordance with IS 2825 from minimum 6 mm thick M.S. plate on shell and minimum 8mm thick M.S. plate on dished ends as per applicable IS standards. The vessel shall be internally lined with 6.00 mm thick rubber, tested to 60 - 80 shore hardness, 15000 RMS volts spark test for continuity. The softener shall have :					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	a) Strainer plates at top and bottom with P.P. strainers with removable nuts and check nuts fixed on the plates.					
	b) GI/CPVC heavy class fabricated internally rubber lined face piping comprising of connections with CI Diaphragm Valves of required size for inlet, outlet, and rinse drain etc.					
	c) Regeneration assembly comprising of power valve, ejector, brine suction valve, and all necessary piping incorporated into the main pipework.					
	d) Pressure gauges (100 mm dia bourdon type pressure gauge) / Sampling points with SS isolation cocks at inlet and outlet.					
	e) All external surfaces of the plant including piping shall be coated with epoxy primer followed by two coats of high gloss epoxy paint .					
	f) The softener shall be complete with all gaskets / fasteners of standard quality as required.					
	g) Initial charge of Ion Exchange resin.					
	h) The softener shall be designed to give rated output at given raw water quality and flow rate without any operational problem and should not get any loss of performance as long as the operating pressure remains within the given range. Any additional provision is required to make the item complete, the same should be included herein.					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	i) M.S. rubber lined vertical, cylindrical self supporting open tank for salt mixing and brine saturation with air agitation arrangement comprising of G. I. heavy class air distributor laid at the bottom of tank, roots type air blower complete in all respects of suitable capacity to agitate the required quantity of brine, piping interconnection between air blower and air distributor. The brine tank to have nozzles for outlet, overflow and drain. Outside finished with high gloss enamel paint over two coats of zinc chromate primer complete including testing and commissioning. Net usable capacity of the tank excluding free board etc., should be at least 10 % more than actual capacity required.					
	Capacity of softening plant : 50 LPM					
	Raw Hardness : 700-1600 mg/l.					
	Regeneration period 8 hrs.					
	Minimum Quantity of soft water between two regenerations = 25KL					
	Approximate Dia = 500 mm, HOS 1600 mm (min.) or as required					
	Type of Resin : Strongly acidic cation resin					
	Make of Resin : Ion Exchange / Rohm & Haas					
	Min. qty. of resin : 200 Ltrs.					
	Operating pressure : 3.0 kg/sqcm					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Test pressure : 5.50 kg/sqcm (Set-1)					
	No. of Softner- 1 no. working					
	Soft water quality: Commercial zero hardness(less than 4 ppm)					
	Providing and fixing G.I.pipes/CPVC pipes to I.S. 3589/1239 (Heavy class) with G.I./CPVC Fittings e.g., Tee, elbow reducers, unions, end cap etc., flanges & clamps, including supporting the pipes with G.I. supports, cutting and making good the walls etc. complete. For Suction & Delivery headers.					
	40/65 mm dia (min.) (Interconnection between units)/ Drain lines etc. as per plant room requirement. (All piping and fitting of required size inside the plant room included in the item)					
	Painting G.I./CPVC pipes with two or more coats of synthetic enamel paint of approved quality and shade over a coat of approved priming coat as directed by the Project-in-charge (shade as per pipe colour code).					
	65 mm dia (min.) (as per required length)					
	Complete W.T.P/softner as mentioned above including testing, training and trial run till comissioning of W.T.P. (Soft water/domestic use)	set	2.0			

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
12.10	Providing and fixing of OxiLyte (Mixed Oxidant) Generation System , based on ECA Technology, producing non toxic mixed Oxidant Slution at 1000 ppm of Oxidant Concentration or any other approved disinfection method excepted by HSCC. The solution should be at a pH 3+-0.5 suitable for 24x7 operations should produce 30L per hour. The system should be supplied complete with appropriate dosing pumps , valves, piping, fittings, chemical dosing tank etc. shop drawing complete in all respect.	set	2.0			
	Subtotal (Water treatment Plant,Pump and Equipment)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
13.00	SEWAGE TREATMENT PLANT					
	Planning,Designing,Detailing,Supplying, Erection,Testing and Commissioning of Package Sewage treatment plant based on MBBR (Moving bed Bio Reactor) technology of average flow rate of 165 cu.m/day for sewer including provision of recirculation of treated sewage/effluent for the use of horticulture purposes including design and execution of all civil,structural,electrical,mechanical,plumbing and processing,ancillary equipments and works etc required to complete the package, getting approval from state pollution control board and other statutory bodies as well as from consultant (HSCC) including the cost of STP building for electrical room, treated sewage under ground storage tank of 80 cu.m capacity etc.					
	All the water retaining structure shall be designed as water retaining structure as per provision of IS code and water proofing with fixed or any other approved chemical shall be carried out by approved agency with 10 year (minimum) garanty. All the unit shall be painted by epoxy or any other approved paints.					
i)	The shop drawings & design of STP shall be prepared by the agency . As per site condition/available space most of the unit will be placed below ground under road/green area.The STP shall comprising of the following units of required size as per detail process and hydraulic design.The structure design shall be carried as per provision of IS code.The agency has to get their structure drawing checked and approved by IIT Delhi or any other govt. Engineering college approved by HSCC.(set-1)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
ii)	RCC Suitable size Bar Screen chamber with minimum free board 300 mm and minimum size 0.5mx1mx0.3m SWD and suitable size SS Bar screen is installed at suitable angle at the inlet of raw sewage sump before pumping. The unit shall be designed for peak flow - 1 no.(min.) .					
	Electrical & mechanical(1 Nos)					
	Civil (1Nos)-will be paid seperately in civil work					
iii)	Supply, installing, testing and commissioning vertical fully floodable type submersible drainage pump of non-corrosive material with shredder/cutter in close coupled design single stage, suitable for handling minimum 20 mm dia solids for transferring raw sewer from sump to outside the building with float switch for automatic start and stop arrangement with panel and wiring, chain and pulley, mechanical seal complete in all respect as per instruction of the Engineer in charge. (The shop drawing or the pumps along with its characteristics curves, model and technical data etc. are to be submitted for approval before purchase of pump).Star delta suitable starter complete in all respect for automatic/manual operation of pump,start and stop push button contactor with required overload production and single phase preventor.					
	Material of Construction (M.O.C): Corrosion Resistant in general : Casing — Cast Iron					
	: Impeller — Ductile cast iron					
	: Bearings — Anti friction, prelubricated ball bearings, packed with grease for life.					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Motor: — Dry Motor with built in over load protection					
	Protection - IP68.					
	Insulation Class - F					
	RAW SEWAGE PUMP-(2 nos min.)					
	Capacity - 120LPM (min.)					
	Head - 15 m					
	Solid handing - 10-20mm					
iv)	RCC Equalisation tank with hydraulic retention time Min.6 Hrs HRT of suitable Size free Board 500 mm,the effluent of equalisation tank is agitated with diffused air that is fed by an air blower, including pipe non-corrosive material and its complete system. (1 unit)					
a)	Civil-will be paid seperately in civil work					
b)	Mechanical & Electrical					
v)	RCC MBBR-(2 nos. minimum) with minimum 4hr. retention time of each reactor of suitable size with Air grid CPVC pipe material of construction or corrosion resistant material,Air diffusers (fine bubble), HDPE approved make Bio media for each aeration tank,with minimum water depth of 3.6 m.					
a)	Electrical & mechanical(2 Nos)					
b)	Civil(2 Nos)-will be paid seperately in civil work					
vi)	ROTARY AIR BLOWERS					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Providing and Installation of Rotary air blowers for air scouring, driver through v-belt or directly coupled through flaxble coupling. Motor shall be of suitable HP for 400-440 volts, ,1500RPM, 3 phase, alongwith air filter, non-return valve, safetyvalve, base plate and necessary air piping fittings, valves, flowmeters etc.					
	(Blower capacity and pressure head shall be suitable to meet the requirement of equalisation tank and Bio reactor suitable for average flow rate of sewer of 165cu.m per day)- 4 nos.(2working +2 stand by)					
vii)	RCC secondary tube settler -1 no. maximum Hydraulic loading 2.0 cu.m/sq.m/hr and with approved quality media. (1 units)					
a)	Electrical & mechanical(1 No.)					
b)	Civil(1No.)-will be paid seperately in civil work					
viii)	Providing and fixing of OxiLyte (Mixed Oxidant) Generation System , based on ECA Technology, producing non toxic mixed Oxidant Slution at 1000 ppm of Oxidant Concentration or any other approved disinfection method excepted by HSCC. The solution should be at a pH 3+-0.5 suitable for 24x7 operations should produce 50litre per hour. The system should be supplied complete with appropriate dosing pumps , valves, piping, fittings, chemical dosing tank etc. complete in all respect. (2 unit)					
ix)	RCC supernatant tank/Filter feed tank minimum 15 cu.m capacity (1 unit) with filter feed pumps - will be paid seperately in civil work					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	FILTER FEED PUMPSETS					
	Providing and installation horizontal single/multistage centrifugal monoblock pumping set with CI body, SS impeller, coupled with totally enclosed fan cooled induction motor mounted on common structural base plate with all pump accessories complete as per specifications inclusive rubber vibration eliminators motor suitable for 415 volts, 1500RPM, 3 phase 50 HZ. A/c supply.					
	Type of pump - Horizontal					
	Capacity -120 LPM					
	Head - 30 M					
	Nos.- 2 (min.)					
x)	MULTI GRADE FILTER					
	Providing and installation of mild steel pressure vessel (as per IS:2825) 6 mm thick natural rubber lining fabrication standard multi grade filter complete in all respects, of total capacity 120LPM, complete with dished ends, supporting legs, manhole cover, frontal pipe work fitting with valves. Plant shall be provided with inlet, outlet pressure gauge, sample cocks, charge of filter media graded sand and internals consisting of strainers fitted on plate for collection. (No. of unit-1)					
	Dia of vessel -700mm (minimum)					
	Shell thickness -6mm (minimum.)					
	Dish end thickness-8mm (minimum.)					
	Nozzie plate -10mm thick (minimum.)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Manhole -450mm					
xi)	ACTIVATED CARBON FILTER					
	Providing and installation of mild steel pressure vessel (as per IS:2825) 6 mm thick natural rubber lining fabrication standard multi grade filter complete in all respects, of total capacity 120LPM, complete with dished ends, supporting legs, manhole cover, frontal pipe work fitting with valves. Plant shall be provided with inlet, outlet pressure gauge, sample cocks, charge of approved quality activated carbon media. (No. of unit-1)					
	Dia of vessel -700mm (minimum)					
	Shell thickness -6mm (minimum.)					
	Dish end thickness-8mm (minimum.)					
	Nozzie plate -10mm thick (minimum.)					
	Manhole -450mm					
xii)	RCC sludge sump (5cu.m minimum) and submersible sludge pump set with CI body, SS impeller and shaft coupled with to a totally enclosed fan cooled iniduction motor complete with HDPED/F pipings, sluice valves, non return valves, fittings etc as required. Motor suitable for 415 volts, 3 phase 50Hz. A/c supply with control auto start float switch with return sludge line upto Bioreactor.					
	SLUDGE PUMP- (2 nos. minimum)					
	Capacity -30 LPM					
	Head - 8 m					
	Solid handing - 50mm (minimum)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Civil - RCC sludge sump and piping(1 Nos)-will be paid seperately in civil work					
xiii)	Providing and fixing 24 plates 600 x 600mm size filter press - 2no. Hydraulically operated with suitable sludge pump and sludge tank of 1,000 ltrs. (min.) capacity alongwith piping, fittings valve etc. complete in all respects.					
xiv)	Providing and fixing dust and vermine proof cubical type motor control panel centre for the various pumps, blower etc. required. It is fabricated from 2mm thick CRCA sheet with stove enamelled finish and comprising of:Panel should have at least 20% spare feeders.					
a.	One incomming main MCCB of required capacity suitable rating					
b.	MCCB/MPCB, one for each motor					
c.	Fully automatic DOL/star delta starters suitable for different motors/pumps used in the ETP.Upto 7.5 HP DOL may be used and above star/delta starter used with push buttons one for each motor and on/off indicating neon lamps.					
d.	Single phasing preventors of appropriate rating for each motor.					
e	rotary type selector switch					
f	Panel type ampere meters, one for each motor shall be with rotary selector switch to monitor line currents.					
g	Panel type volt meters, on incoming main with rotary selecting switch to monitor voltage between phase to neutral and phase to phase.					
h	Neon phase indicating lamps and indicating lamp for each motor on incoming mains.					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
i	Rotary switch for manual or auto operation for each pump					
j	Fully taped separate aluminium bus bar of required capacity for normal and emergency supply.					
k	The panel shall be pre-wired with coded wiring. All intercnnting wiring from incoming main to switchgear, meters and accessories within the switchboard panel shall have suitable copper ferrules					
xv)	Electrical works (including supply, installation and termination of cables of suitable size as per HP of all pumps with all structural supports, clamps and cable trays as per approved design/specifications,installation will be as per relevant Indian standard and CPWD specification alongwith control cable of suitable size).(1 lot). Any other electrical and mechanical item required to complete the work.					
xvi)	Providing and fixing digital type flow meter etc. complete in all respects. (1 no.)					
xvii)	Providing and fixing lab. Equipments including digital type pH meter, COD kit, TDS kit, bicker, conical flask etc. complete in all respects. (1 set)					
xviii)	Sludge drying beds (5.0X5.0X1.8) (minimum size) (complete civil & mechanical work)-will be paid seperately in civil work					
xix)	Rooms for Pumps & control panel (30 sq.m.) (minimum size)					
a)	Civil-will be paid seperately in civil work					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
b)	Electrical & mechanical					
xx)	RCC Treated water tank (80m3) (minimum)-will be paid seperately in civil work					
	Note: The rate also be included the cost of trial run for period of two month from the date of handing over and operation and maintenance of the plant for a period of one year from the expiry of trial run period including the cost of consumables complete as specification as directed .Obtain required no. of test report of treated/raw sewer during trial run. Tentative raw sewage generation & characteristics for designing of the plant are mentioned below. The bidder has to take this own judgment for designing the system					
	Average daily flow (cum/day) : 165 CuM per day					
	pH : 5.5 - 8.5					
	BOD (5 days at 20 degree C) (mg/l) : 150-400					
	COD (mg/l) : 250-600					
	Suspended solids (mg/l): 200-400					
	Oil & grease (mg/l) :20-50					
	The treated effluent characteristics shall be as per local pollution control board standards. The treated effluent (indicative) shall have following standard:-					
	BOD : Less than 10 Mg/l					
	COD : Less than 100 mg/l					
	Suspended solids: Less than 10 mg/l					
	Oil & grease : Less than 10 mg/l					
	pH : 6.5 - 8.0					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	Bio-assay test : Survival of fish after 96 hrs 100 %					
	Odor-Odorless					
	On the basis of the above and as per site condition the detailed drawing along with design calculation (Hydraulics, process, Structure etc.) shall be submitted to HSCC for the approval of the same before the start of the work The STPhas to be designed and installed by the approved vendor (Geo Miller, Ion Exchange, Fontus,Thermax, Pollucon Technologies, AKAR Implex (P) Ltd., KWAN Environmental solution).					
	Complete functional STP 165 KLD capacity as mentioned above					
	The work to be executed as per approved shop drawings/design which meet the functional requirement quoted by the agency.The price quoted by the bidder shall include all the items stated above and also any other item/work required for completion of the work and efficient functioning of STP nothing extra shall be paid beyond above rates (BOQ item no. 10.00 subhead i to xx) except civil item cost.	Set	1.0			
	SUB TOTAL(Sewage Treatment Plant)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
14.00	WATER SUPPLY PUMP PANEL					
	Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, wall mounted type, dust, damp and vermin proof, indoor type Distribution Board/Panel complete with busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, powder coat painted and having following incoming and outgoing switchgears complete as required. Panel shall have IP-42 protection.					
	INCOMER :					
	125 Amp 415 volts, 35 KA (lsc), FP MCCB with e/f protection thermal magnetic release having variable current settings of 0.8 to 1.0 In.					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 no. 0 to 500 V Digital voltmeter with selectot switch					
	1 to 0 to 125 Amps Digital ammeter with selector switch with one set of 125/5A C.T. s					
	BUSBARS :					
	160 Amp TPN busbars of aluminium					
	OUTGOINGS :					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
i	4 Sets of following (For Domestic Pump)					
	1 No. 32 Amp. 415/500 volts,25 KA, TPN, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 to 0 to 32 Amps Digital ammeter with selector switch with one set of 32/5A CT,s.					
	1 No. 3 Phase, DOL starter of 7.5 HP with thermal overload relay, Push Buttons, Single Phase Preventer and Switches etc complete as required.					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
ii	10 Set of following (for Filter feed pumps- WTP,Drainage Pump)					
	1 No. 16 Amp. 415/500 volts,25 KA, TPN, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, DOL starter of 2 HP with thermal overload relay, Push Buttons, Single Phase Preventer and Switches etc complete as required.					
	Neon indicating Lamps for "ON" and "OFF" indication with 2A SP control MCBs.					
iii	8 Set of following (for Soft water transfer pump,Filter feed Pumps-for softner, Domestic pump and drainage pump)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	1 No. 16 Amp. 415/500 volts,25 KA, TPN, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, DOL starter of 1 HP with thermal overload relay, Push Buttons, Single Phase Preventer and Switches etc complete as required.					
	Neon indicating Lamps for "ON" and "OFF" indication with 2A SP control MCBs.					
	WATER SUPPLY PUMP Panel as mentioned above	Set	1.0			
	Sub Total (Water Supply Electrical Panel)					

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7

Name of Work: BOQ of Plumbing work of Rajkumari Amrit Kaur(Hostel,Academic , Auditorium and Basement)

Sl. No.	Description of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1	2	3	4	5	6	7

PROJECT NAME: Proposed Buildings at RKAK Campus , New Delhi

ABSTRACT OF COST

S.No	DESCRIPTION OF WORK	Amount in figures(in Rs.)
1	FIRE FIGHTING	
	Sub Total(Fire Fighting work)	
	GRAND TOTAL	

PROJECT NAME: Proposed Buildings at RKAK Campus , New Delhi						
Name of Works: BOQ of Fire Fighting Works						
Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.00	FIRE FIGHTING SYSTEM					
1.01	Providing and laying S&S Centrifugally Cast (Spun) / Ductile Iron Pipes conforming to IS : 8329 :					
1.01.1	150 mm dia Ductile Iron Double Flanged	Metre	800.0			
1.02	Providing and laying D.I. specials of class K-12 suitable for push-on jointing as per IS : 9523					
1.02.1	Upto 600 mm dia	quintal	38.0			
1.03	Providing push-on-joints to Centrifugally (Spun) Cast Iron Pipes or Ductile Iron Pipes including testing of joints and including the cost of rubber gasket :					
1.03.1	150 mm dia pipes	joints	350.0			
1.04	Excavating trenches of required width for pipes, cables etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5m including getting out the excavated soil, and then returning the soil as required, inlayers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed within a lead of 50 m					
1.04.1	Pipes, cables etc exceeding 80 mm dia but not exceeding 300 mm dia	Metre	700.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.05	Providing, fixing jointing and testing of Heavy (class -C) G.I. pipes as per relevant IS :1239/4736 with special accessories like tees, elbow, gasket, flanges, flanged joints, rubber insertion nuts and bolts including earth work excavating and trenching, wrapping pipe with 4mm thick 500mm width tar based polymeric corrosion protection tape or equivalent suitable to GI/ MS pipe line including applying uniform coat of cold pipe primer complete 1 m below the ground level, refilling in layers not exceeding 20 cm in depth consolidated each deposited layer by ramming & watering complete in all respect as per IS : 1022 (Under ground)					
a)	150 mm dia G.I. Pipe with flange joints (5.4 mm wall thickness)	Metre	60.0			
b)	80 mm dia G.I. Pipe with flange joints	Metre	50.0			
1.06	Heavy class G.I. pipes conforming to IS with accessories like tees, elbows, flanged joints, rubber insertion, nuts, bolts or welded joints including fixing the pipe with suitable flat iron strip clamps/brackets, structural members, dash fastener , cutting hole and chases in walls, floor, R.C.C. slab etc. and making good the same, including painting pipes and fittings with a primer coat of steel primer and two coats of postal red enamel paint etc. complete as required. (All the fitting i.e. tee /elbow, Valve shall be joint the pumps will flanged joints)					
a)	200 mm dia (with Flanged joints)	Metre	80.0			
b)	150 mm dia (with Flanged joints)	Metre	830.0			
c)	100 mm dia (with Flanged joints)	Metre	310.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
d)	80 mm dia	Metre	420.0			
e)	65 mm dia	Metre	260.0			
f)	50 mm dia	Metre	210.0			
g)	40 mm dia	Metre	720.0			
h	32 mm dia	Metre	505.0			
i)	25 mm dia	Metre	1440.0			
1.07	Providing and fixing Single headed hydrants flanged inlet with 63 mm female instantaneous outlet of gunmetal complete with male blank caps, chains conforming to IS:5290 type A with stainless steel orifice plate (if required) to keep the pressure not more than 3.5 kg/sq.cm at any point.	Each	69.0			
1.08	Providing 63mm dia 15 m long reinforced rubber lined hose pipe conforming to IS: 636-1992 Part-II with gunmetal male & female coupling wire wound with pipe as required.	Each	94.0			
1.09	Providing and fixing 63mm dia 15 m long canvas hose pipe complete with gunmetal male & female coupling wire wound with the pipe The pipe shall confirm to IS: 4927.	Each	44.0			
1. 10	Providing and fixing Gunmetal branch pipe with 20mm dia nozzle conforming to IS:903. suitable for installation connections to hose coupling etc. as required.	Each	69.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.11	Providing and fixing Four way fire brigade connection housed in steel cabinet of size 900mm x 750mm x 400mm fabricated from 1.5mm thick M.S. sheet having lockable arrangement, openable glazed door with 4mm thick glass, including painting a coat of steel primer and two coats of postal red enamel paint, with necessary supports for the cabinet etc. with 150 mm dia. non return and butterfly valves complete in all respects.					
a)	4 Way - 150mm dia	Each	3.0			
1.12	Providing and fixing Set of "Siamese" quadruplet instantaneous fire brigade connections comprising of two gunmetal instantaneous male inlet coupling 63mm dia with plug and cap, chain bends, tees etc for inlet to the static tank.	Each	3.0			
1.13	Providing & Fixing 150 mm dia, 4 way suction coupling for firebrigade withdrawal of water from the fire tank	Each	3.0			
1.14	Providing and fixing glazed door shutter and frame for Fire hose cabinet with hold fasts (frame fabricated from 40 x 40 x 5mm and shutter from angle) 2100 mm high x 1200 mm wide x 600mm deep with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint complete as per drawing and as directed. The words " hose cabinet" to be painted on the box complete in all respects.	Each	47.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.15	Providing and fixing Weather proof standard stand post type hose cabinet (900mm x 750 mm x 400 mm) out door type made of 1.5mm thick M.S. sheet having central opening glazed door with 4mm thick glass suitable for accommodating hydrants, 2 Nos. canvas hose pipe and branch pipe including necessary locking arrangements, painting one coat of primer and two coats of postal red enamel paint.. The shutters are to be lockable type. The words " hose cabinet" to be painted on the box.	Each	22.0			
1.16	Providing and fixing cast iron body IS: 210 FG 220 and double flange gear simple operation type butterfly valve conforming to IS: 13095 with SS304 disc and shaft NITNLE rubber replaceable seat of the following size complete with bolts, nuts, washers and rubber insertions as per specification.					
a)	150 mm dia	Each	16.0			
b)	80 mm dia	Each	8.0			
1.17	Supplying, testing, installation & commissioning of pressure switches for pumps including necessary wiring upto the control panel.	Each	16.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.18	Constructing masonry chamber 90x90x100 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 fine sand) for sluice valve, with C.I. surface box 100mm top diameter, 160mm bottom diameter and 180mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design.					
	with F.P.S. bricks	Each	4.0			
1.19	Supplying and Fixing First Aid Hose Reel , wall mounting swinging type complete with drum & bracket of MS construction, spray painted in Post office Red, confirming to IS 884/1995 with upto date amendments, complete with the following as required.					
	36 Meter long 20 mm dia water hose Thermoplastic (Textile reinforced) Type - 2 as per IS : 12585					
	20 mm dia gun metal ball valve & nozzle.					
	Drum and brackets for fixing the equipments on wall.					
	Connection from riser with stop valve (gun metal) & M.S. Pipe	Each	47.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1. 20	Providing and fixing C.I. sluice valves (With cap) of approved quality complete with bolts, nuts, rubber insertions etc. (the tail pieces if required will be paid separately) Class II					
a)	200 mm dia	Each	5.0			
b)	150 mm dia	Each	8.0			
1.21	Supply, Installation, Testing and Commissioning of 100 mm dia Bourden type, Stainless Steel dial type Pressure Gauge including brass isolation valve and siphon pipe having calibration of 0 - 16 Kg / cm ² .	Each	78.0			
1.22	Supplying and Fixing of Fire Man's axe with heavy insulated rubber as per standard conforming to IS 926	Each	47.0			
1.23	Supplying and Fixing vane type waterflow switch with contacts suitable for installation on 50 mm to 150 mm dia pipeline for a service pressure upto 20 Kg/sq.cm.	Each	18.0			
1.24	Providing, Fixing, Testing and Commissioning of Sprinkler Installation Control Valve of Cast iron body and brass / bronze working parts comprising of water motor, alarm, bronze seat clapper and clapper arm, hydraulically driven mechanical gong bell to sound continuous alarm when the Sprinkler system activates, pressure gauges, emergency releases, strainer, pressure switch, cock valve complete with drain valve and bypass, test control box, ball valves, MS pipe of required size, flanges, orifice plate, gasket etc. of size 200/150 mm dia, as required.	Each	3.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.25	Supplying, Installation, Testing & Commissioning modular construction master control annunciation panel for sprinkler with provision for requirer No. of Zone (30% additional spares),eachsprinkler hydrant will have atleast 2 zone on each floor as approved by engineer.The panel shall have but not limited to the following arrangment.					
a)	Indication of Zone sprinkler					
b)	Indication of zone fault					
c)	Fire/fault hooter					
d)	Alarm cancel for fire/fault					
e)	Battery for emergency back up of 4 Hrs.	Set	3.0			
1.26	Providing and Fixing 15 mm dia gunmetal / brass quartzoid type Sprinkler Head with quartz bulb and set to operate at specified temperature.					
a)	Pendent / Upright type, 68 C, Chrome plated	Each	1150.0			
b)	Side wall extended throw 20 mm dia 68 C, Chrome plated	Each	160.0			
1.27	Providing and fixing of brass water curtain nozzles(K factor 180) of approved make and manufacturer.					
		Each	100.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.28	Fabricating, Supplying, Installation, Testing and Commissioning Air Vessel of continuous welded construction with flanged discharge header on the top of each riser fabricated out of 10 mm thick dished ends and 8 mm thick MS sheet, Air Release Valve complete with suitable drain arrangement with 25 mm dia gun metal wheel valve complete with all accessories etc. as required of the following sizes					
a)	1.2 Metre high and 250 mm dia	Each	9.0			
1.29	Supply, Installation, Testing and Commissioning External Yard Hydrant Stand Post comprising of GI pipe 80 mm dia (heavy duty C class) from existing ringmain to about 1 meter above ground level and Single Headed Yard Hydrant Valve with 80 mm dia flanged inlet, instantaneous gunmetal coupling of 63 mm dia with cast iron wheel ISI marked, conforming to IS : 5290 (Type A), with ABS cap and chain etc. complete with all accessories as required.	Each	22.0			
1.30	Providing and placing on terrace polyethylene water storage tank ISI : 12701 MARKED indicating the BIS license No with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	Ltrs	65000.0			
1.31	Supply, erection, testing & commissioning of exit glow sign board of size 200mm x 350 mm wall mounting signage consisting of photo luminescent coating on acrylic cover	Each	60.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.32	Providing and fixing fire extinguisher of carbon dioxide type consisting of brand new high pressure steel cylinder bearing IS: 7285 mark and having the approval of controller of explosives Nagpur, wheel type valve bearing IS:3224 mark internal discharge tube, 1 meter long high pressure discharge hose, non conducting horn, suspension bracket, fully charged bearing IS: making fixed to wall as directed.					
a)	4.5kg capacity cylinder	Each	47.0			
1.33	Providing and fixing 9 liters capacity fire extinguisher water type gas pressure conforming to IS marking, fixed to wall.	Each	47.0			
1.34	Providing and fixing ABC type fire extinguishers complete in all respects.					
a)	Capacity 5.0 Kg.	Each	47.0			
1.35	Providing and fixing ABC type automatic modular ceiling mounted type extinguisher with body powder coated 10 lts. Capacity min. 300 mm dia 68 degree centigrade bul temperature complete in all respect of approved make and model	Each	6.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.36	Fabricating, Supplying, Installation, Testing and Commissioning Air Vessel of continuous welded construction with flanged discharge header in pump house fabricated out of 10 mm thick dished ends and 8 mm thick MS sheet, Air Release Valve, complete with drain arrangement with 25 mm dia gun metal wheel valve complete with all accessories etc. as required of the following sizes					
a)	2 Metre high and 450 mm dia suitable to operate Jockey Pump, Main Fire Pump & Diesel Engine Driven Fire Pump	Each	6.0			
1.37	Providing and fixing C.I. non-return valve complete with gunmetal seat, bolts, nuts washer & rubber insertions as required conforming to IS:5312.					
a)	150 mm dia	Each	5.0			
b)	80 mm dia	Each	7.0			
1.38	Supplying, installing, testing and commissioning of electric driven fire pump suitable for automatic operation consisting of the following (as per CPWD specification Part V-1985 for Fire Fighting and its amendments) (For Hydrant system & Sprinkler system).					

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
a)	Fire pump with SS/bronze impeller, CI casing, SS shaft & mechanical seal shall be horizontal split casing centrifugal suction type multistage having following capacity and head so as to ensure a minimum pressure of 3.0 kg per square cm. at the highest and farthest out let at the specified flow complete with necessary strainer / foot valve suction side and pressure gauge on the delivery side including by pass arrangement for periodical testing of the working of the pumping set as required. The pump shall be provided with mechanical seals.					
b)	Squirrel cage type TEFC motor suitable for operation on 415V, 10%, 3 phases 50 Hz. system of suitable HP for the above pump with synchronous speed of 1500 RPM and flexible coupling. The pump motor should conform to IS: 325-1978.					
c)	Common bed plate fabricated from mild steel channel or cast iron type.					
d)	Suitable cement concrete pump foundation & vibration damping arrangement with cushy foot mounting as required.					
l)	Capacity 2280 LPM and Head 70 Metres	Each	1.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
1.39	Supplying, installing, testing and commissioning of electric driven fire pump suitable for automatic operation consisting of the following (as per CPWD specification Part V-1985 for Fire Fighting and its amendments) (For pseudocompartmentisation in basement).					
a)	Fire pump with SS/bronze impeller, CI casing, SS shaft & mechanical seal shall be horizontal split casing centrifugal suction type multistage having following capacity and head so as to ensure a minimum pressure of 3.0 kg per square cm. at the highest and farthest out let at the specified flow complete with necessary strainer / foot valve suction side and pressure gauge on the delivery side including by pass arrangement for periodical testing of the working of the pumping set as required. The pump shall be provided with mechanical seals.					
b)	Squirrel cage type TEFC motor suitable for operation on 415V, 10%, 3 phases 50 Hz. system of suitable HP for the above pump with synchronous speed of 1500 RPM and flexible coupling. The pump motor should conform to IS: 325-1978.					
c)	Common bed plate fabricated from mild steel channel or cast iron type.					
d)	Suitable cement concrete pump foundation & vibration damping arrangement with cushy foot mounting as required.					

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
l)	Capacity 2850 LPM and Head 30 Metres	Each	2.0			
1.40	Supplying, installing, testing and commissioning of diesel engine driven fire pump suitable for automatic operation consisting of the following (as per CPWD specifications PartV 1985.) (For Hydrant system & Sprinkler system).					
a)	Horizontal centrifugal type multi-stage, fire pump with stainless steel impeller CI casing, SS shaft & mechanical seal complete of following capacity and Head so as to ensure a minimum pressure of 3.0 kg per sq.cm. at the highest & farthest outlet at the specified flow, complete with necessary strainer pressure gauge on the delivery side etc. including by pass arrangement for periodical testing of the working of the pump set as required. The pump shall be provided with mechanical seals.					
b)	Water cooled cold starting type multi cylinder 4 stroke diesel engine, developing suitable BHP at 1500 RPM for the above pump set with automatic starting mechanism, cooling system shall be with radial cool engine, maintenance free batteries, battery charge unit, flexible coupling with the pump, common bed plate for mounting diesel engine fuel day tank fuel piping and pump and vibration damping arrangement by cushy foot mounting as required complete in all respects.					

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
c)	The engine shall be capable to drive the pump at 150% rated discharge at 65% head and shall be suitable for 10% overload capacity for one hour in any period of 12 hrs. continuous run.					
d)	Common bed plate fabricated from mild steel channel or cast iron type.					
e)	Isolation Valve					
f)	Suitable cement concrete pump foundation & vibration damping arrangement with cushy foot mounting as required.					
l)	Capacity 2280 LPM and Head 70 Metres	Each	1.0			
1.41	Supplying, installation, testing and periodic commissioning of electric motor driven automatic pressurization pump set consisting of the following (as per specification) (For Hydrant system & Sprinkler system).					
a)	Centrifugal pump of 180 LPM capacity capable of building up pressure lost in any leakage in the system against atotal head (mentioned as under) complete with C.I. casing stainless steel impellor ; mechanical seal & S.S. shaft necessary strainer, pressure gauge on delivery side etc. including by-pass arrangement for testing of the working of the pumping set as required .					

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
b)	Squirrel cage A.C. induction motor suitable for operation on 415 V, 10% 3 phase 50 Hz. A.C. supply and of minimum 7.5 HP,1500 RPM, for the above pump with flexible coupling as per specification and conforming to IS: 325/ 1978 and shall be TEFC type only.					
c)	Common bed plate fabricated from mild steel channel or cast iron type.					
d)	Suitable cement concrete pump foundation with vibration damping arrangement with cushy foot or similar mounting as per required.					
l)	Head - 70 Metres	Each	1.0			
1.42	Providing & fixing puddle flanged including 40 cm long GI pipe piece welded / threaded with MS plates 450x450x6mm thick with both end screwed / flanged					
a)	For 80 mm dia pipe	Each	8.0			
b)	for 150 mm dia pipe	Each	8.0			
c)	for 200 mm dia pipe	Each	8.0			
1.43	Supplying, installing, testing and commissioning of electric motor driven type automatic pressurisation, pump set suitable for automatic operation of terrace down comer and consisting of the following (as per CPWD specifications Part V-1985) for fire fighting and its amendmndts).					

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
a	Fire pump with stainless steel impeller CI casing, SS shaft shall be horizontal end suction centrifugally type having a capacity of 900 LPM against a total head of 25m so as to ensure a minimum pressure of 3.0 kg/sqm at the highest and farthest out at the specified flow complete with necessary strainer with foot valve in suction side and pressure gauge on the delivery side including bypass arrangement for periodic testing of the working of the pumping set as required. The pump shall be provided with mechanical seals.(Including taking necessary approval of complete fire fighting scheme from local fire authority before and after start of work) {Agency also has to submit characteristic curve of the pumps, model & other technical data for approval before placing the order}					
b	Squirrel cage AC induction motor suitable for operation of 415 V ,+/-10%, 3 phase 50 HZ, AC supply and of minimum 7.5 HP,1500 RPM for the above pump with flexible coupling as per specification and conforming to IS 325-1978 and shall be TEFC type only					
c	Common base plate fabricated from mild steel channel or castiron type					
d	Star delta suitable starter complete in all respect for automatic/manual operation of pump,start and stop push button contactor with required overload protection and single phase preventor					
e	Suitable cement concrete pump foundation with vibration damping arrangement with cushy foot mounting as required and having provision of suitable weather protection cover.	set	8.0			

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
B	Fire Fighting PANEL(Electical)					
1.44	FIRE PANEL Emergency					
	Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, wall mounted type, dust, damp and vermin proof, indoor type Distribution Board/Panel complete with busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, powder coat painted and having following incoming and outgoing switchgears complete as required. Panel shall have IP-42 protection.					
	INCOMER :					
	320 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 no. 0 to 500 V Digital voltmeter with selectot switch					
	1 to 0 to 400 Amps Digital ammeter with selector switch with one set of 400/5A C.T. s					
	BUSBARS :					
	400 Amp TPN busbars of aluminium					
	OUTGOINGS :					
	3 Sets of following					

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
	1 No. 200 Amp. 415/500 volts,35 KA, TPN, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, fully automatic star-delta starter of 75 HP with thermal overload relay, Timer, Push Buttons and Auto-manual selector switch etc complete as required.					
	Single Phase preventer					
	1 to 0 to 200 Amps Digital ammeter with selector switch with one set of 200/5A CT,s.					
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
	2Sets of following					
	1 No. 125 Amp. 415/500 volts,35 KA, three Pole, Moulded Case Circuit Breaker with variable current setting .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, fully automatic star-delta starter, type II of 45 HP with thermal overload relay, contactor, Timer, Push Buttons and Auto-manual selector switch etc complete as required.					
	Single Phase preventer					
	1 to 0 to 120 Amps Digital ammeter with selector switch with one set of 120/5A CT,s.					

Item No	Description Of Item	Unit	Total Qty.	Rate in words (in Rupees)	Rate in figures (in Rs.)	Amount in figures (in Rs.)
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
	1 Set of following (in a separate cubicle)					
	One no. Diesel engine auto starting kit with all necessary relay, controls, wiring etc to start 75 HP diesel engine when electrical driven fire pump fail to start.					
	One no rectifier circuit, battery charger, batteries, DC Voltmeter, DC Ammeter etc.					
	FIRE PUMP Panel as mentioned above	Set	1.0			

BILL OF QUANTITY

ELECTRICAL WORKS

SUMMARY OF COST ESTIMATE - ELECTRICAL WORKS

S.No.	DESCRIPTION	Amount Figure (In Rs.)	In	Amount in Words (Rs.)
1	SUBHEAD 1: H.T. SUB STATION			
2	SUB HEAD 2: MAIN LT PANEL.			
3	SUB HEAD 3 : DG SET & ACCESSORIES			
4	SUB HEAD 4 :MV PANELS			
5	SUB HEAD- 5: MCB DISTRIBUTION BOARDS.			
6	SUB HEAD 6: WIRING			
7	SUB HEAD: 7 - LIGHT FIXTURE AND FANS			
8	SUB HEAD 8 : TELEPHONE SYSTEM			
9	SUB HEAD 9:CONDUITING FOR COMPUTER SYSTEM .			
10	SUB HEAD 10: CONDUITING FOR TV OUTLETS			
11	SUB HEAD 11 : STAGE LIGHTING			
12	SUB HEAD : 12 STAGE CURTAIN			
13	SUB HEAD : 13 VIDEO PROJECTION AND PUBLIC ADDRESS SYSTEM :			
14	SUB HEAD 14 : FIRE DETECTION AND ALARM			
15	SUB HEAD 15: LIGHTENING PROTECTION			
16	SUB HEAD 16 : LIFTS			
17	SUB HEAD 17: LT CABLES			
18	SUB HEAD 18: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS			
19	SUB HEAD 19: OUT DOOR LIGHTING			
20	SUBHEAD 20 : BOOM BARRIER			
	GRAND TOTAL FOR ALL ELECTRICAL WORKS			

BOQ FOR ELECTRICAL WORKS OF HOSTEL, AUDITORIUM ,ACADEMIC BLOCK &BASEMENT PARKING OF RAJ KUMARI AMRIT KAUR NURSING COLLEGE - NEW DELHI.

S.No.	Description.	Unit.	Total Qty	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount in Rs.
1	2	3	5	6	7	8
	SUBHEAD 1: H.T. SUB STATION					
1.00	SUBSTATION EQUIPMENTS					
1.01	HT Panel, (Main Substation)					
	Supply, erection, testing and commissioning of 3 panel, 630 A ,11 kV, 3 Phase, 50 Hz., metal clad, dead front, 350 MVA rupturing capacity Vacuum Circuit Breaker including power pack of suitable capacity , Incoming & Outgoings as per the detailed specifications and drawings including connections etc. complete including door interlocking and expendable as required.					
A.	INCOMER :					
i)	1 No. VCB having following					
	1 No.630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 350 MVA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)					
	1 set of 11kV/110V Potential Transformers with HRC fuses					
	1 Set of Phase indicating lamps with HRC fuses					
	1 No. 0-15 kV Digital voltmeter with selector switch					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY					
	Push button for ON, OFF & TRIP circuit healthy					
	1 set of 50/5-5A Current Transformer for metering and protection					
	1 No.digital Amps ammeter with selector switch					
	1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay					

	Digital frequency meter,Digital Tri vector meter.					
	1 Set of undervoltage relay and Overvoltage relay					
	Trip circuit supervision relay,Auxiliary relays with shunt trip coil					
	1 No. Master Trip relay					
	1 No. Digital Power factor meter					
	BUSBARS :					
	11kV, 350 MVA, 1000 Amps Three Phase busbars of aluminium					
B.	OUTGOINGS :					
	<i>2 No. VCB each having following</i>					
	1 No. 630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 350 MVA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)					
	1 set of 11kV/110V Potential Transformers with HRC fuses					
	1 Set of Phase indicating lamps with HRC fuses					
	1 No. 0-15 kV Digital voltmeter with selector switch					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY					
	Push button for ON, OFF,TRIP&TRIP circuit healthy					
	1 set of current transformers of suitable ratio depending upon the rating of transformer for metering and protection					
	1 No.Digital ammeter with selector switch and one set of C.T. (Rating as per SLD)					
	1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay					
	Digital frequency meter,Digital Tri vector meter.					
	1 Set of undervoltage relay and Overvoltage relay					
	Trip circuit supervision relay,Auxiliary relays with shunt trip coil					
	1 No. Master Trip relay					
	1 No. Digital Power factor meter					
	HT Panel (Main Substation - 1)as mentioned above	Set	1			
	TRANSFORMER :					

1.02	Supply, erection, testing and commissioning of 750 KVA, 11/0.433 kV, 3 Phase, 4 wire, 50 Hz., ON-AN Transformer for outdoor duty with offload tap changer range -5%, 0, +5% in the steps of 2.5% per step, cable box connection at primary (HT side) and secondary end (LT side) shall be connected through busduct/ cables, the transformer shall be complete with first filling of oil, with double float buchholz relay protection, high winding temperature/oil temp. sensors, complete with all fittings and accessories, interconnection of control cables and accessories as per detailed technical specifications.	Each	2			
1.03	BATTERY CHARGER PANEL Supply, erection, testing and commissioning of the battery charger panel complete with battery, control cabling etc. as required. Capacity of battery charger suitable for above mentioned H.T. Panels. Sealed Maintenance Free (SMF) battery of suitable ampere hour capacity for above 11kV VCB panels in HT Panel Room of the building as specified above. Boost and Trickle charger suitable for above items. 1 No. AC Voltmeter (0-500Volt) 1 No. DC Voltmeter 1 No. DC Ammeter 1 set of AC and DC indicating lamps 1 No. DC Battery charging position indicator DC distribution board suitable for above application to incoming & outgoing MCBs include tripping, closing and indication etc. Control cabling between DC Distribution panel to the HT panel of the Substation with suitable core 1.5 sqmm copper cable	Each	1			
1.04	BUS DUCTS :					

	i)	Supply, Installation, testing and commissioning of 1250 phase and neutral TPN, 415 V, 3 Phase, 4 Wire, sandwich construction Aluminium Bus Duct including bends, flexible joints, earth bus (2 runs of aluminium strips), supports for installation, supporting arrangements, etc. complete as per technical specifications and as required.	Mtrs.	150			
1.05		H.T. CABLE					
		Supply of following sizes of 11 kV grade multicore aluminium conductor XLPE armoured power cable as per IS : 7098.					
	i)	3 Core, 185 sq mm	Mtrs.	200			
1.06		Laying of one number 3 core XLPE power cable of grade exceeding 1.1 KV but not exceeding 11KV of size exceeding 120 sqmm but not exceeding 240 Sqmm direct into ground including excavation, sand cushioning, protective covering and refilling the trench, supply of route marker complete as required.	Mtrs.	200			
1.07		Supplying and making end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size 3 Core, XLPE aluminium conductor cable of 11kV grade as required.					
	i)	185 sqmm	Each	6			
		TOTAL FOR SUB HEAD 1: H.T. SUB STATION					
		SUB HEAD 2: MAIN LT PANEL.					
2.01		MAIN L.T. PANEL					

	Supply, installation, testing and commissioning of LT Panel, cubicle type, totally enclosed, powder coated, free standing type, dust, damp and vermin proof Panel made up of 14 SWG CRCA sheet, complete with aluminium busbars, danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, necessary interlocking, and having incoming and outgoing switchgears with cable alley in front as mentioned below and complete as per technical specifications and as required. The size of cable alley shall be sufficient enough to accomodate the cable sizes as mentioned in the SLD/ specifications/ drawings etc.					
	Note :					
	1. All ACBs shall have 5 NO + 5 NC contacts					
	2. All relays to operate at 240Volts, Single phase, 50Hz., AC supply through UPS. UPS is also in the scope of supply.					
	3. Digital Multifunction metre should be suitable for true RMS metering. Metre should measure line and phase voltage , current of all three phases and neutral, HZ, PF, KW, KWH, KVAR, KVARH, KVA, KVAH ,voltage and current including one set of CT. Metre should be EMI/ EMC compliant.					
A.	INCOMER:					
	i) 2 No. ACB Panels each having following:					
	1 No. 1250A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have Icw=Ics = 50 KA for 1 sec.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
	Push button to CLOSE the ACB.					
	R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs					

	Restricted earth faulty protection with one set of CT.					
	Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs					
	1200/5A CTs with CT shorting links for power factor improvement panel suitable for giving signal to APFCR at less than 10% of secondary ratio current					
B.	BUSBARS : 2000 Amps Phase TPN busbars of aluminium.					
C.	BUS COUPLER :					
	i) 1 No. ACB Panels each having following:					
	1 No. 1250 A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous & earth Fault trip including under voltage release and lockable trip push button. The ACB should have $I_{cw} = I_{cs} = 50KA$ for 1 sec.					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.					
	Push button to CLOSE the ACB.					
	1 Set of A meter with ASS and CTs.					
D.	OUTGOING.					
	i) 2 No. ACB Panels each having following:					
	800 A, 415/500V, Fully Motorised, Fully Drawout type (EDO), TPN, Air Circuit Breaker with microprocessor based overload, short circuit, instantaneous & earth Fault trip including under voltage release and lockable trip push button. ACB should have $I_{cw} = I_{cs} = 50 KA$ for 1 sec.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
	Push button to CLOSE the ACB					
	R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs					

	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
ii)	2 Nos. MCCB as per following details / specifications:					
	630 Amp 415 volts, 50 KA (Ics) TPN MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
iii)	4 Nos.MCCB as per following details/ specifications:					
	400 Amp 415 volts, 50 KA (Ics), TPN microprocessor based MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
iv)	1 Nos.MCCB as per following details/ specifications:					
	320 Amp 415 volts, 50 KA (Ics), TPN microprocessor based MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					

	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
v)	3 Nos. MCCB as per following specifications:					
	100 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
vi)	4 Nos. MCCB as per following specifications:					
	63 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
	Main LT Panel as mentioned above.	Set	1			

2.02	CAPACITOR PANEL						
	Supply, installation, testing and commissioning of M.V. cubicle type totally enclosed free standing type, dust, damp, powder coated and vermin proof Capacitor Panel complete with busbars, M.V. danger notice plate, ammeter, ammeter selector switch, indicating lamps, CT's, Extra heavy duty Capacitors suitable for non linear loads upto 20% (L&T model MD-XL or equivalent), contactors suitable for capacitor switching (current limiting contactor circuit to suppress switching inrush current) interconnections with suitable capacity aluminium leads/solid aluminium strips, rods, connection of incoming and outgoing cables with thimbles, and having following incoming and outgoing switchgears complete as required						
	A. INCOMER :						
	400 Amp 415 volts, 50 KA (Ics), FP microprocessor based MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.						
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.						
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB						
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.						
	Digital energy metre with CT						
	10 steps Intelligent microprocessor based Automatic Power factor Correction relay having measurement sensitivity of 1 %.						
	Extension of incoming busbars for connection of multicore armoured aluminium cables.						
	B. METERING :						

		1 set of digital Amp. Meter, digital Power factor meter and Digital voltmeter					
	C.	BUSBARS :					
		630 Amp FP busbars of aluminum					
	D.	OUTGOINGS :					
	ii)	1 Nos . MCCB as per following details/ specification:					
		100 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current					
		ON/ OFF delay timers for switching capacitor circuit.					
		"ON" and "OFF" LED indicating lamp and 2A control SP MCBs					
		Push button for CLOSE and TRIP					
		Extended rotary operating mechanism					
		50 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					
	iii)	6 Nos . MCCB as per following details/ specification:					
		63 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current					
		ON/ OFF delay timers for switching capacitor circuit.					
		"ON" and "OFF" LED indicating lamp and 2A control SP MCBs					
		Push button for CLOSE and TRIP					
		Extended rotary operating mechanism					
		25 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					
	iv)	3 Nos . MCCB as per following details/ specification:					
		32 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current					
		ON/ OFF delay timers for switching capacitor circuit.					

	"ON" and "OFF" LED indicating lamp and 2A control SP MCBs					
	Push button for CLOSE and TRIP					
	Extended rotary operating mechanism					
	10 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					
	Capacitor panel as mentioned above.	Set	2			
	TOTAL SUBHEAD 2: MAIN LT PANEL.					
3.00	SUB HEAD 3 : DG SET & ACCESSORIES					
	SOUND PROOF DG SETS OF 500 KVA IN AUDITORIUM :					
3.01	Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 500 KVA Prime Power Ratings , 415 volt at 1500 RPM, 0.8 power factor suitable for 50 Hz, 3 phase system , suitable bhp, water cooled type diesel engine- alternator set mounted on common base frame, return fuel cooler, battery & battery charger, Anti Vibration mounting pads, Engine alternator safeties, electronic governor including all accessories & their wiring as per technical specification. This includes the following:					
	Supplying and fixing of suitable sizes High class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe for exhaust of DG sets including pollution control board norms and as required.					
	Supply and fixing of 50mm thick compressed mineral wool insulation (Rock wool) for D.G. exhaust pipe with 22 gauge aluminium sheet cladding etc. as required for the under mentioned dia pipe.					

-	Supply, installation, testing and commissioning of suitable size fuel pipe for connecting diesel engine to individual day service tank including supply and fixing of required valves & filters etc. as required.					
-	Fabrication of supports for exhaust pipe, fuel pipe or for any other purpose out of suitable M.S. structural steel including supplying and applying of enamel paint of approved shade after one coat of steel primer of reputed company.					
-	Supplying and fixing of suitable capacity cable adapter box for alternator.					
-	Providing and fixing oil tank of 990 litres capacity complete with suitable M.S. fabricated MS stand oil level indicator gauge tank and stand duly painted, complete with float switches etc. as required.					
-	Factory assembled Sound proof Canopy as per pollution control board requirement to achieve noise level desired during night condition, with base frame, doors, inspection window, fresh air supply fans, light fixtures for illumination with switch, wiring for light fixtures and power sockets, etc.					
-	Any other item required for completion of system above (D.G. set)					
A	DG AMF PANEL WITH AUTO TRANSFER SWITCH.					
	Supply, installation, testing and commissioning of DG , cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of 14/ 16SWG CRCA sheet, (load bearing members 14 SWG and doors 16 SWG) ,complete with aluminium busbars, M.V. danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, powder coated and having incoming and outgoing switchgears as mentioned below and complete as required.					

B.	Auto changeover scheme through auto transfer switch of suitable rating as per the rating of the DG set along with the following AMF components.					
C.	PROTECTION AND AMF COMPONENTS for above mentioned DG set.					
-	Auto/manual/test/off selector switch					
-	2 Nos over voltage relay, 2 nos. reverse power relay and 2 nos. under voltage relay.					
-	3 sets of current transformers 15 P 10 accuracy for protection and 15 VA class - I for metering					
-	Energy analyzer unit to indicate current voltage frequency power factor and KWH					
-	Indicating lamps for load on mains and load on set.					
-	Fuse for instruments.					
-	Battery charger, complete with transformer/rectifier, DC voltmeter and ammeter, selector switch for trickle, off and boost the current adjustment.					
-	Main supply failure monitor.					
-	Supply failure timer					
-	Restoration timer.					
-	Control unit with three impulse automatic engine start / stop and failure to start lockout.					
-	Impulse counter with locking and reset facility.					
-	On/Off/ Control circuit switch with indicator.					
-	Audio/ Video annunciation for :					
a)	High stator temperature.					
b)	Low lubricating oil pressure					
c)	Engine over speed					
d)	Engine fails to start					
e)	Full load/ maximum load warning.					
D.	ENCLOSURE :					

	Fabrication, PVC Sleeving, Control/Power Wiring and necessary electrical/ mechanical interlocking etc any other item required for proper functioning of the system complete as required.					
	DG SET WITH AMF AND ATS PANEL as mentioned above	Set	1			
	SOUND PROOF DG SETS OF 320 KVA BASEMENT VENTILATION:					
3.02	Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 320 KVA Prime Power Ratings , 415 volt at 1500 RPM, 0.8 power factor suitable for 50 Hz, 3 phase system , suitable bhp, water cooled type diesel engine- alternator set mounted on common base frame, return fuel cooler, battery & battery charger, Anti Vibration mounting pads, Engine alternator safeties, electronic governor including all accessories & their wiring as per technical specification. This includes the following:					
	Supplying and fixing of suitable sizes High class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe for exhaust of DG sets including pollution control board norms and as required.					
	Supply and fixing of 50mm thick compressed mineral wool insulation (Rock wool) for D.G. exhaust pipe with 22 gauge aluminium sheet cladding etc. as required for the under mentioned dia pipe.					
	Supply, installation, testing and commissioning of suitable size fuel pipe for connecting diesel engine to individual day service tank including supply and fixing of required valves & filters etc. as required.					

-	Fabrication of supports for exhaust pipe, fuel pipe or for any other purpose out of suitable M.S. structural steel including supplying and applying of enamel paint of approved shade after one coat of steel primer of reputed company.					
-	Supplying and fixing of suitable capacity cable adapter box for alternator.					
-	Providing and fixing oil tank of 990 litres capacity complete with suitable M.S. fabricated MS stand oil level indicator gauge tank and stand duly painted, complete with float switches etc. as required.					
-	Factory assembled Sound proof Canopy as per pollution control board requirement to achieve noise level desired during night condition, with base frame, doors, inspection window, fresh air supply fans, light fixtures for illumination with switch, wiring for light fixtures and power sockets, etc.					
-	Any other item required for completion of system above (D.G. set)					
A	DG AMF PANEL WITH AUTO TRANSFER SWITCH.					
	Supply, installation, testing and commissioning of DG , cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of 14/ 16SWG CRCA sheet, (load bearing members 14 SWG and doors 16 SWG) ,complete with aluminium busbars, M.V. danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, powder coated and having incoming and outgoing switchgears as mentioned below and complete as required.					
B.	Auto changeover scheme through auto transfer switch of suitable rating as per the rating of the DG set along with the following AMF components.					

C.	PROTECTION AND AMF COMPONENTS for above mentioned DG set.					
-	Auto/manual/test/off selector switch					
-	2 Nos over voltage relay, 2 nos. reverse power relay and 2 nos. under voltage relay.					
-	3 sets of current transformers 15 P 10 accuracy for protection and 15 VA class - I for metering					
-	Energy analyzer unit to indicate current voltage frequency power factor and KWH					
-	Indicating lamps for load on mains and load on set.					
-	Fuse for instruments.					
-	Battery charger, complete with transformer/rectifier, DC voltmeter and ammeter, selector switch for trickle, off and boost the current adjustment.					
-	Main supply failure monitor.					
-	Supply failure timer					
-	Restoration timer.					
-	Control unit with three impulse automatic engine start / stop and failure to start lockout.					
-	Impulse counter with locking and reset facility.					
-	On/Off/ Control circuit switch with indicator.					
-	Audio/ Video annunciation for :					
a)	High stator temperature.					
b)	Low lubricating oil pressure					
c)	Engine over speed					
d)	Engine fails to start					
e)	Full load/ maximum load warning.					
D.	ENCLOSURE :					
	Fabrication, PVC Sleeving, Control/Power Wiring and necessary electrical/ mechanical interlocking etc any other item required for proper functioning of the system complete as required.					
	DG SET WITH AMF AND ATS PANEL as mentioned above	'Set	1			

		SOUND PROOF DG SETS OF 100 KVA IN ACADEMIC BLOCK :					
3.03		Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 100 KVA Prime Power Ratings , 415 volt at 1500 RPM, 0.8 power factor suitable for 50 Hz, 3 phase system , suitable bhp, water cooled type diesel engine- alternator set mounted on common base frame, return fuel cooler, battery & battery charger, Anti Vibration mounting pads, Engine alternator safeties, electronic governor including all accessories & their wiring as per technical specification. This includes the following:					
	-	Supplying and fixing of suitable sizes High class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe for exhaust of DG sets including pollution control board norms and as required.					
	-	Supply and fixing of 50mm thick compressed mineral wool insulation (Rock wool) for D.G. exhaust pipe with 22 gauge aluminium sheet cladding etc. as required for the under mentioned dia pipe.					
	-	Supply, installation, testing and commissioning of suitable size fuel pipe for connecting diesel engine to individual day service tank including supply and fixing of required valves & filters etc. as required.					
	-	Fabrication of supports for exhaust pipe, fuel pipe or for any other purpose out of suitable M.S. structural steel including supplying and applying of enamel paint of approved shade after one coat of steel primer of reputed company.					
	-	Supplying and fixing of suitable capacity cable adapter box for alternator.					

-	Providing and fixing oil tank of 990 litres capacity complete with suitable M.S. fabricated MS stand oil level indicator gauge tank and stand duly painted, complete with float switches etc. as required.					
-	Factory assembled Sound proof Canopy as per pollution control board requirement to achieve noise level desired during night condition, with base frame, doors, inspection window, fresh air supply fans, light fixtures for illumination with switch, wiring for light fixtures and power sockets, etc.					
-	Any other item required for completion of system above (D.G. set)					
A.	DG AMF PANEL WITH AUTO TRANSFER SWITCH.					
	Supply, installation, testing and commissioning of DG , cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of 14/ 16SWG CRCA sheet, (load bearing members 14 SWG and doors 16 SWG) ,complete with aluminium busbars, M.V. danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, powder coated and having incoming and outgoing switchgears as mentioned below and complete as required.					
B.	Auto changeover scheme through auto transfer switch of suitable rating as per the rating of the DG set along with the following AMF components.					
C.	PROTECTION AND AMF COMPONENTS for above mentioned DG set.					
-	Auto/manual/test/off selector switch					
-	2 Nos over voltage relay, 2 nos. reverse power relay and 2 nos. under voltage relay.					

-	3 sets of current transformers 15 P 10 accuracy for protection and 15 VA class - I for metering					
-	Energy analyzer unit to indicate current voltage frequency power factor and KWH					
-	Indicating lamps for load on mains and load on set.					
-	Fuse for instruments.					
-	Battery charger, complete with transformer/rectifier, DC voltmeter and ammeter, selector switch for trickle, off and boost the current adjustment.					
-	Main supply failure monitor.					
-	Supply failure timer					
-	Restoration timer.					
-	Control unit with three impulse automatic engine start / stop and failure to start lockout.					
-	Impulse counter with locking and reset facility.					
-	On/Off/ Control circuit switch with indicator.					
-	Audio/ Video annunciation for :					
a)	High stator temperature.					
b)	Low lubricating oil pressure					
c)	Engine over speed					
d)	Engine fails to start					
e)	Full load/ maximum load warning.					
D.	ENCLOSURE :					
	Fabrication, PVC Sleeving, Control/Power Wiring and necessary electrical/ mechanical interlocking etc any other item required for proper functioning of the system complete as required.					
	DG SET WITH AMF AND ATS PANEL as mentioned above	`Set	1			
	SOUND PROOF DG SETS OF 82.5 KVA IN HOSTEL BLOCK :					

3.04	Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 82.5 KVA Prime Power Ratings , 415 volt at 1500 RPM, 0.8 power factor suitable for 50 Hz, 3 phase system , suitable bhp, water cooled type diesel engine- alternator set mounted on common base frame, return fuel cooler, battery & battery charger, Anti Vibration mounting pads, Engine alternator safeties, electronic governor including all accessories & their wiring as per technical specification. This includes the following:					
	- Supplying and fixing of suitable sizes High class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe for exhaust of DG sets including pollution control board norms and as required.					
	- Supply and fixing of 50mm thick compressed mineral wool insulation (Rock wool) for D.G. exhaust pipe with 22 gauge aluminium sheet cladding etc. as required for the under mentioned dia pipe.					
	- Supply, installation, testing and commissioning of suitable size fuel pipe for connecting diesel engine to individual day service tank including supply and fixing of required valves & filters etc. as required.					
	- Fabrication of supports for exhaust pipe, fuel pipe or for any other purpose out of suitable M.S. structural steel including supplying and applying of enamel paint of approved shade after one coat of steel primer of reputed company.					
	- Supplying and fixing of suitable capacity cable adapter box for alternator.					
	- Providing and fixing oil tank of 990 litres capacity complete with suitable M.S. fabricated MS stand oil level indicator gauge tank and stand duly painted, complete with float switches etc. as required.					

	-	Factory assembled Sound proof Canopy as per pollution control board requirement to achieve noise level desired during night condition, with base frame, doors, inspection window, fresh air supply fans, light fixtures for illumination with switch, wiring for light fixtures and power sockets, etc.					
	-	Any other item required for completion of system above (D.G. set)					
	A.	DG AMF PANEL WITH AUTO TRANSFER SWITCH.					
		Supply, installation, testing and commissioning of DG , cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of 14/ 16SWG CRCA sheet, (load bearing members 14 SWG and doors 16 SWG) ,complete with aluminium busbars, M.V. danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, powder coated and having incoming and outgoing switchgears as mentioned below and complete as required.					
	B.	Auto changeover scheme through auto transfer switch of suitable rating as per the rating of the DG set along with the following AMF components.					
	C.	PROTECTION AND AMF COMPONENTS for above mentioned DG set.					
	-	Auto/manual/test/off selector switch					
	-	2 Nos over voltage relay, 2 nos. reverse power relay and 2 nos. under voltage relay.					
	-	3 sets of current transformers 15 P 10 accuracy for protection and 15 VA class - I for metering					
	-	Energy analyzer unit to indicate current voltage frequency power factor and KWH					
	-	Indicating lamps for load on mains and load on set.					

	- Fuse for instruments.					
	- Battery charger, complete with transformer/rectifier, DC voltmeter and ammeter, selector switch for trickle, off and boost the current adjustment.					
	- Main supply failure monitor.					
	- Supply failure timer					
	- Restoration timer.					
	- Control unit with three impulse automatic engine start / stop and failure to start lockout.					
	- Impulse counter with locking and reset facility.					
	- On/Off/ Control circuit switch with indicator.					
	- Audio/ Video annunciation for :					
	a) High stator temperature.					
	b) Low lubricating oil pressure					
	c) Engine over speed					
	d) Engine fails to start					
	e) Full load/ maximum load warning.					
	D. ENCLOSURE :					
	Fabrication, PVC Sleeving, Control/Power Wiring and necessary electrical/ mechanical interlocking etc any other item required for proper functioning of the system complete as required.					
	DG SET WITH AMF AND ATS PANEL as mentioned above	Set	1			
	TOTAL SUBHEAD 3: DG SETS					
	SUB HEAD 4 :MV PANELS					

4.00		Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, free standing type/ wall mounted type, dust, powder coated, damp and vermin proof, indoor type Distribution Board/Panel complete with busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, and having following incoming and outgoing switchgears complete as required. Panel shall have IP-42 protection.					
	A1	HOSTEL					
4.01		MV PANEL NORMAL AT GROUND FLOOR :					
	a)	INCOMER:					
		400 Amp 415 volts, 35 KA (Ics) FP MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. 0 to 500 Amp Digital ammeter with selector switch with one set of 500/5A C.Ts.					
	b)	BUSBARS:					
		630 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	1 Nos. MCCB as per following specifications:					
		125 Amp 415 volts, 35 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					

		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		Digital energy metre with CT					
	ii)	7 Nos. MCCB as per following specifications:					
		100 Amp 415 volts, 35 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		Digital energy metre with CT					
		MV PANEL NORMAL AT GROUND FLOOR as mentioned above	Set	1			
4.02		MV PANEL EMERGENCY AT GROUND FLOOR :					
	a)	INCOMER:					
		125 Amp 415 volts, 50 KA (Isc), FP MCCB with thermal magnetic release having variable current settings .					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					

		1 No. 0 to 400 Amp Digital ammeter with selector switch with one set of 400/5A C.Ts.					
	b)	BUSBARS: 200 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	2 no. 25 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	ii)	6 no. 40 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	iii)	3 no. 63 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
		MV PANEL EMERGENCY AT GROUND FLOOR as mentioned above	Set	1			
4.03		MV PANEL FIRST,SECOND,THIRD,FOURTH,FIFTH,SIXTH FLOOR OF HOSTEL					
	a)	INCOMER: 1 no.100Amps , 415 volts, 35 KA (lsc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings . R,Y&B phase indicating lamp (LED type) with 2A control SP MCB Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. 0 to 100 Amp Digital ammeter with selector switch with one set of 100/5A C.Ts.					
	b)	BUSBARS: 150 Amp TPN Aluminium busbars					

	c)	OUTGOING:					
	i)	5 no. 63 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
		MV PANEL FIRST,SECOND,THIRD,FOURTH,FIFTH,SIXTH FLOOR OF HOSTEL as mentioned above:	Set	6			
	A2	AUDITORIUM BLOCK :					
4.04		MV PANEL AT AUDITORIUM BLOCK ELEC ROOM AT 1ST FLOOR.					
	a)	INCOMER:					
		1 no.125Amps , 415 volts, 35 KA (lsc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. 0 to 125 Amp Digital ammeter with selector switch with one set of 125/5A C.Ts.					
	b)	BUSBARS:					
		160 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	3 no. 32 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	ii)	2 no. 40 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	iii)	3 no. 63 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					

		MV PANEL AT AUDITORIUM BLOCK ELEC ROOM AT 1ST FLOOR. as mentioned above	Set	1			
	A3	ACADEMIC BLOCK:					
4.05		MV PANEL NORMAL ACADEMIC BLOCK : (IN BASEMENT)					
	a)	INCOMER:					
		1 Nos. MCCB as per following details/ specifications:					
		630 Amp 415 volts, 35 KA (Ics) FP MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs					
	b)	BUSBARS :					
		800 Amps Phase FP busbar of aluminium.					
	c)	OUTGOING.					
	i	3 Nos. MCCB as per following details/ specifications:					
		200 Amp 415 volts, 35 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					

		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	ii	7 Nos. MCCB as per following details/ specifications: 160 Amp 415 volts, 35 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	iii	1 Nos. MCCB as per following details/ specifications: 63 Amp 415 volts, 25 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		MV PANEL NORMAL ACADEMIC BLOCK : (IN BASEMENT) as mentioned above :	Set	1.00			
4.06		MV PANEL EMERGENCY ACADEMIC BLOCK : (IN BASEMENT)					
	a)	INCOMER: 1 Nos. MCCB as per following details/ specifications: 160 Amp 415 volts, 35KA (Isc), FP MCCB with thermal magnetic release having variable current settings .					

	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A cobntrol SP MCBs					
b)	BUSBARS :					
	200 Amps Phase FP busbar of aluminium.					
c)	OUTGOING.					
i)	2 Nos. MCCB as per following details/ specifications:					
	100 Amp 415 volts, 35 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
i)	3 No.63 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
ii)	3 No.40 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
iii)	5 No.32 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
iv)	5 No.16 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
	MV PANEL EMERGENCY ACADEMIC BLOCK : (IN BASEMENT) as mentioned above.	Set	1.00			

4.07		Basement & Ground Floor (Normal)					
	a)	INCOMER:					
		1 no. 160 Amps , 415 volts, 35KA (lsc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. Digital ammeter with selector switch with 160/5A C.T.'s.					
		BUSBARS:					
	b)	200 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	2 No. 63 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
	ii)	5 No.32 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
		Basement & Ground Floor (Normal) as mentioned above	Set	1.00			
4.08		Second floor & Sixth floor(Normal)					
	a)	INCOMER:					
		1 no. 160 Amps , 415 volts, 35KA (lsc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					

		1 No. Digital ammeter with selector switch with 200/5A C.T.'s.					
		BUSBARS:					
	b)	250 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	3 No.63 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
	ii)	3 No.32 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
	iii)	2 No.32 Amp 415 volts, 9 KA ,DoublePole (DP), Miniature Circuit Breaker.					
		Second floor & Sixth floor(Normal) as mentioned above	Set	2.00			
4.09		Third floor, Fourth floor & Fifth Floor(Normal)					
	a)	INCOMER:					
		1 no.160 Amps , 415 volts, 35KA (lsc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. Digital ammeter with selector switch with 160/5A C.T.'s.					
		BUSBARS:					
	b)	200 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	3 No.63 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
	ii)	3 No.32 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
		Third floor & Fourth floor(Normal) as mentioned above	Set	3.00			

4.10		MV panel First Floor-1 (Emergency)					
	a)	INCOMER: 1 no. 100 Amps , 415 volts, 35KA (Isc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings. R,Y&B phase indicating lamp (LED type) with 2A control SP MCB Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. 1 No. 0 to 500 V Digital voltmeter with selector switch. 1 No. 0 to 100 Amp Digital ammeter with selector switch with 100/5A C.T.'s.					
	b)	BUSBARS: 250 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	2 No. 63 Amp 415 volts, 9 KA ,Four Pole,MCB.					
	ii)	2 No. 32 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
		MV panel First Floor-1 (Emergency) as mentioned above	Set	1.00			
4.11		MV PANEL FOR BASEMENT VENTILATION:					
	a)	INCOMER: 1 Nos. MCCB as per following details/ specifications: 800 Amp 415 volts, 35 KA (Ics) FP MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release. R,Y&B phase indicating lamp (LED type) with 2A control SP MCB Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					

	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs					
b)	BUSBARS :					
	1000 Amps Phase FP busbar of aluminium.					
c)	OUTGOING.					
i	8 Nos. MCCB as per following details/ specifications:					
	200 Amp 415 volts, 35 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
ii	2 Nos. MCCB as per following details/ specifications:					
	160 Amp 415 volts, 35 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	MV PANEL FOR BASEMENT VENTILATION as mentioned above:	Set	1.00			

	A4	BASEMENT under (Audi + Hostel):					
4.12		Basement MV Panel (Audi + Hostel):					
	a)	INCOMER:					
		1 no.160 Amps , 415 volts, 35KA (Isc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. Digital ammeter with selector switch with 160/5A C.T.'s.					
		BUSBARS:					
	b)	200 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	2 Nos. MCCB as per following details/ specifications:					
		63 Amp 415 volts, 25 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings.					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	ii)	11 No.63 Amp 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
		New Basement Parking MV Panel as mentioned above	Set	1.00			
		TOTAL SUB HEAD 4 : MV PANEL					
		SUB HEAD- 5: MCB DISTRIBUTION BOARDS.					

5.00	MCB DISTRIBUTION BOARD							
5.01	Supplying & fixing following way, three pole and neutral,prewired,sheet steel, MCB distribution board, 415 volts,on recess/surface complete with loose wire box, terminal blocks, tinned copper busbar, neutral link, earth bar,din bar, detachable gland plate, interconnections, phosphatized and powder painted including earthing etc.Before procurement of DB the contractor has to take approval of DB schedule/ drawing of each DB from the Electrical Engineer, HSCC, as per technical specifications and as required.(but without MCB & RCCB),							
	i	4 way (8+12), Double door		Each	3			
	ii	6 way (8+18), Double door		Each	20			
	iii	8 way (8+24), Double door		Each	24			
	iv	12 way (8+36), Double door		Each	13			
2.02	Supplying & fixing following way, single pole and neutral,prewired,sheet steel, MCB distribution board, 240 volts,on recess/surface complete with loose wire box, terminal blocks, tinned copper busbar, neutral link, earth bar,din bar, detachable gland plate, interconnections, phosphatized and powder painted including earthing etc.Before procurement of DB the contractor has to take approval of DB schedule/ drawing of each DB from the Electrical Engineer, HSCC, as per technical specifications and as required.(but without MCB & RCCB),							
	i	8 way (4+8), Double door		Each	2			
5.02	Supplying & fixing 6 Amps to 32 Amps rating, 240 volts,'B' series, miniature circuit breaker suitable for lighting & other loads of following poles in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications & as required.							

	i	Single pole	Each	984			
	ii	Single pole & neutral (DP)	Each	2			
	iii	Triple pole & neutral (FP)	Each	13			
5.03		Supplying & fixing following rating, four pole, 415 volts, Miniature Circuit Breaker (MCB), in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications and as required.					
	i	40 Amps	Each	2			
	ii	63 A mps	Each	45			
5.04		Supplying & fixing following rating, four pole, 415 volts, Residual Current Circuit Breaker (RCCB) having a sensitivity current upto 300 mA in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications and as required.					
	i	32 Amps	Each	13			
	ii	40 Amps	Each	1			
	iii	63 Amps	Each	45			
5.05		Supplying and fixing Single pole Blanking plate in the existing MCB DB complete as required.	Each	360			
		TOTAL SUB HEAD-5: MCB DISTRIBUTION BOARDS.					
		SUB HEAD 6: WIRING					
6.00		WIRING					
6.01	i	Wiring for light point/fanpoint/ exhaust fan point/call bell point with 1.5 sq.mm. PVC insulated, fire retardant low smoke (FRLS) copper conductor cable, single core/ multi strand, in steel conduit (Including supplying & recess laying of MS conduit and accessories) including the following and complete as required.					

	ii	Supplying and Fixing Modular type switches (modular Bell push in case of call bell points) in suitable size modular metal boxes, base plate & modular cover plates, space for fixing electronic fan regulator in case of fan point wiring & space for fixing 5A socket on the board etc.					
	iii	Supplying and fixing Hexagonal fan Boxes with 3 mm thick hylem sheet covers in case of Fan Points					
	iv	Supplying & Fixing Ceiling Rose in case of Exhaust Fan Points etc.					
		Note :					
		i) Unless otherwise specified all the conduiting work to be done in recess					
		Point wiring as mentioned above	Point	3596			
6.02	i	Wiring for twin control light points with 1.5 sq.mm. PVC insulated, FRLS copper conductor cable in MS conduit (including supplying and recess laying of MS conduit) including the following and complete as required.					
	ii	Supplying and Fixing Modular type two numbers 2 Way switches in suitable size modular metal boxes, base plate & modular cover plates etc.					
		Note :					
		i) Unless otherwise specified all the conduiting work to be done in recess					
		Wiring for twin control light points as mentioned above	Point	172			
6.03		Wiring for 5A light plugs with 1.5 sq.mm. PVC insulated, FRLS copper conductor cable including one number 1.5 sq.mm. PVC insulated, copper conductor cable for earthing in surface/recessed ISI marked MS conduit (including supply and recess laying of ISI marked MS conduit) as per technical specifications and as required.	Point	234			

6.04	5 A light plug wiring same as above but plug point is in the switch board itself.	Point	35			
6.05	Wiring for computer points (Three sockets & one switch) with 2.5 sq.mm. PVC insulated, FRLS copper conductor cable including one number 2.5 sq.mm. PVC insulated, copper conductor cable for earthing in surface/recessed MS conduit (including supply and recess laying of conduit) as per technical specifications and as required.	Point	195			
6.06	Wiring for 16 amp power plug with 2X4 sqmm PVC insulated, FRLS copper conductor, single core/multi strand cable in surface/recessed MS conduit (including supply and recess laying of MS conduit with all accessories) along with 4 sqmm PVC insulated, copper conductor, single core/multi strand cable for loop earthing etc per technical specifications & as required. Directly from MCB-Distribution Board to the Socket Outlets	Point	330			
6.07	Wiring for 20 amp power plug with 2X4 sq.mm. PVC insulated, copper conductor, single core cable in surface/recessed ISI marked MS conduit (including supply and recess laying of ISI marked MS conduit with all accessories) along with 1X4 sqmm PVC insulated, copper conductor, single core cable for loop earthing, as per technical specifications & as required.	Point	9			
6.08	Wiring for 32 amp power plug with 2X6 sq.mm. PVC insulated, copper conductor, single core cable in surface/recessed ISI marked MS conduit (including supply and recess laying of ISI marked MS conduit with all accessories) along with 1X6 sqmm PVC insulated, copper conductor, single core cable for loop earthing, as per technical specifications & as required.	Point	46			

6.09		Supply, Installation, testing & commissioning of AC modular metal box with 25 A socket and indicating light plug with 32 A single pole MCB.	Point	46			
6.10		Wiring for submain/ circuit wiring with following sizes of PVC insulated, copper conductor single core/multi strand cable in recessed steel conduit (including supply & laying of recessed conduit) as required.					
	i)	2X2.5 Sqmm with 1 No. 2.5 sqmm PVC insulated, copper conductor for earthing.	Metre	7065			
	iii)	2X6 Sqmm with 1 No. 6 sqmm PVC insulated, copper conductor for earthing	Metre	40			
	iv)	4X6 Sqmm with 2 No. 6 sqmm PVC insulated, copper conductor for earthing	Metre	48			
	v)	4X10 Sqmm with 2 No. 10 sqmm PVC insulated, copper conductor for earthing	Metre	273			
	vi)	4X16 Sqmm with 2 nos 16 sq mm PVC insulated, copper conductor for earthing.	Metre	841			
6.11		Supplying and fixing suitable Module metal box on surface or in recess including providing and fixing 3 pin 5/6 amps. modular socket outlet with shutters and 5/6 amps. modular type switch, base plate, modular cover plate, connections etc. and all civil works 'complete as required.	Each	234			
6.12		Supplying and fixing suitable module modular metal box on surface or in recess including providing and fixing 6 pin 15/16 A modular socket outlet with shutters and 15/16 A modular switch, base plate, modular cover plate, connections, etc. and all civil works complete as required.	Each	330			

6.13	Supply and fixing following 20 Amps, 240 volts, 2P+E, Industrial Socket Outlet (with plugs) in a metal box with 20 SP MCB in a sheet steel cover on surface or recess complete with all accessories including connections, testing and commissioning etc. as required.	Each	9				
6.14	Supply, Installation, Testing & Commissioning 63 Amps, TPN MCCB in a sheet steel enclosure, extended rotary operating mechanism complete with all accessories as required.	Each	6				
6.15	Supplying and fixing suitable Module metal box on surface or in recess including providing and fixing three nos 3 pin 5/6 amps. modular socket outlet with shutters and one no. 10 amps. modular type switch, base plate, modular cover plate, connections etc. and all civil works 'complete as required. (For computer Points)	Each	195				
6.16	Supplying, providing & fixing cordless musical bell, batteries etc of approved make complete as required.	Each	27				
6.17	Supplying, providing & fixing LED aviation light (Philips XGP 400 1XLED-K2/RD 240V or approved equivalent) including wiring complete as required.	Each	4				
	TOTAL SUBHEAD: 6- WIRING						
	SUB HEAD: 7 - LIGHT FIXTURE AND FANS						
7.00	LIGHT FIXTURES AND FANS						
7.01	Supply of following light fixture with high efficiency electronic ballast, starter, capacitor, reflector, diffuser, MS body/housing holder etc. complete with all fixing accessories as required.						

i	1X28 watt box type flourescent light fixture (Philips TMS 122M1XTL5 28 W EBT or approved equivalent) (136b/136bw)	Each	726			
ii	2X28 watt box type flourescent light fixture with reflector (Philips TMS 122M2XTL528 W EBT or approved equivalent) (236b)	Each	1014			
iii	1X 36 watt surface mounted luminare suitable for 36 watt TLD lamps with clear acrylic diffuser (GE : GETC1X36 AC S HF or approved equivalent). 136CAC	Each	110			
iv	1X36watt surface mounted flourescent light fixture (Philips TCS 306 1XTLD 36W EBE or approved equivalent) 136smo1	Each	164			
v	1X36watt recess mounted flourescent light fixture (Philips TBS 0501XTLD36 W EBE MI or approved equivalent) 136RMO1	Each	20			
vi	2X TL5 28 watt recess mounted mirror optics flourscent light fixture (Philips TBS 050 2XTLD 36W EBE MI or approved equivalent). (236RMO1/236 RMO2)	Each	47			
vii	2 X36watt surface mounted flourescent light fixture (Philips TCS 306 2XTL5 28W EBP or approved equivalent) 236SMO1/236SMO2	Each	169			
viii	2X TL5 28 watt surface mounted flourescent light fixture (Philips TCS 350 2XTL5 28W EBE C5 or approved equivalent) (236SMO3)	Each	80			

7.02		Supply of following compact fluorescent light fixture with electronic ballast, starter, capacitor, yellow light lamps, reflector, diffuser, MS body/housing holder etc. complete with all fixing accessories as required.					
	i	1x9 watt Bulk Head light fixture (Philips FXC 101 1XPL-S/2P11 W ACO or approved equivalent) BH	Each	46			
	ii	2X18 watt recessed downlight fixture with CFL lamp (Philips FBH 145 M 2XPLC/4P 18W EBW 240 V or approved equivalent) DL1	Each	120			
	iii	2X26 watt recessed downlight fixture with CFL lamp (Philips 225/226 HF ZZG 225 ALR or approved equivalent) DL2	Each	25			
	iv	2X26 watt recessed downlight fixture with CFL lamp (Philips FBH 145 M 2XPLT/4P 26W EBW 240 V or approved equivalent) DL3 in audi.	Each	132			
	v	1X65 watt highbay luminaire with CFL lamp, prismatic diffuser & polycarbonate reflector (Philips HPK205 1XEHLT65 W PR or approved equivalent) DL4.	Each	22			
	vi	2X13 watt surfac mounted downlight fixture with CFL lamp (GE CFL C2X13 DN FGS (Lento) or approved equivalent) DL5	Each	118			
	vii	2 X 11 watt surface mounted mirror optics (Philips FCS 031 2XPLS/2P11W I 240 VOR EQUIVALENT) (211CFLRECT)	Each	231			
	viii	2X10 watt Mirror top (Decon 05UB or approved equivalent) (w toilet)	Each	93			

	ix	Surface mounted Batten holder (Plastic) with 13 watt CFL	Each	20			
	x	1x15 watt GLS lamp in wall recessed fixture (Decon 54VW, in die cast aluminium or approved equivalent) used as a night lamp NLWM	Each	6			
	xi	Exit light of pendant mounted maintained type 'EXIT' LED light with inbuilt battery pack for one hour duration.(Crompton greaves EXL/S/1/SE/H/DD or aproved equivalent)	Each	5			
	xii	2x13 watt non louvered path light with frosted glass of green colour. (Decon 54 OP 08 or approved equivalent)	Each	34			
	xiii	1X13 watt wall bracket with polycarbonate diffuser and CFL lamp (Decon 05UK RIB or approved equivalent) WB1	Each	10			
7.03		Supply of following ceiling fans (Crompton Greaves "High Breeze" or approved equivalent) complete with double ball bearing, motor, blades, downrod, canopies, capacitor, modular type electronic fan regulator, suitable for operation on 230 volts, 50 Hz., 1 phase, AC supply complete as required					
	i	900 mm sweep	Each	15			
	ii	1200 mm sweep	Each	445			
	iii	1400 mm sweep	Each	70			
7.04		Supply of 900 RPM, 300 mm heavy duty exhaust fan suitable for single phase 230 volts, 50 Hz., AC supply complete with motor, louvers/shutters etc. complete as required.	Each	79			

7.05	Supply of 900 RPM, 450 mm heavy duty exhaust fan suitable for single phase 230 volts, 50 Hz., AC supply complete with motor, louvers/shutters etc. complete as required.	Each	6			
7.06	Supply of 450 mm sweep, crompton greaves model "high flow" 18" wall mounted fan complete with double ball bearing, motor, blades, capacitor etc suitable for single phase 230 volts, 50 Hz., AC supply, complete as required.	Each	32			
7.07	Installation, testing and commissioning of prewired, fluorescent fittings of all types, complete with all accessories and tube etc. directly on ceiling/wall, including connections with 1.5 sq.mm. PVC insulated, FRLS copper conductor, single core/ multi strand cable etc. as required.	Each	2330			
7.08	Installation, testing and commissioning of prewired, compact fluorescent lamp fixture (CFL fixtures) of all types, complete with all accessories and lamp etc. directly on ceiling/wall, including connections with 1.5 sq.mm. PVC insulated, FRLS copper conductor, single core/ multi strand cable etc. as required.	Each	862			
7.09	Installation, testing and commissioning of ceiling fan and modular type electronic fan regulator (Electronic regulator to be fixed in switch board) including wiring the down rod and connection with 1.5 sqmm FR PVC insulated, copper conductor single core/multi strand cable including providing & fixing phenolic laminated sheet cover on the fan box, etc. as required.	Each	530			

7.10		Installation, testing and commissioning of exhaust fan up to 450 mm sweep in the opening, including making the hole to suit the size of the above fan including , fixing of louvers/ shutters with frame making good the damages etc. as required.	Each	79			
7.11		Installation, testing and commissioning of wall mounted fan up to 450 mm sweep including supply and fixing wall bracket arrangement complete as required.	Each	32			
TOTAL SUBHEAD 7 : LIGHT FIXTURE & FANS							
SUB HEAD 8 : TELEPHONE SYSTEM							
8.00		TELEPHONE SYSTEM					
8.01		Wiring for telephone point with Supply & laying two pair 0.5 Sq. mm solid, annealed copper conductor insulated with high density polythlene. The insulated cores twisted to form pairs, helically wrapped with polyster tape, over all insulation of FR PVC, unarmoured telephone cable in MS conduit (including supply & recessed laying of M.S. conduit), including providing & fixing of two module modular metal box on recess with following pair cord outlet, connections etc. complete as required.This also includes conduiting, wiring from floor Tag blocks to individual telephone outlets.					
	i	1 pair cord outlet (Jack Type)	Point	60			
	ii	2 pair cord outlet (Jack Type)	point	8			
8.02		Supplying, Installation, testing and commissioning of following sizes of telephone distribution board in M.S. hinged type lockable box duly painted complete with Krone type tag block etc. including terminations of cable as required.					
	i	50 Pair	Each	1			

	ii	20 Pair	Each	1			
	iii	10 Pair	Each	6			
8.03		Supplying and drawing of following pairs .5 mm dia annealed bare copper conductor Polythene insulated, core twisted into pairs armoured telephone cable on surface/tray with saddels etc. complete as required.					
	i	20 Pair	Metre	40			
	ii	10 Pair	Metre	70			
8.04		Supplying and drawing of following pairs .5 mm dia annealed bare copper conductor Polythene insulated, core twisted into pairs armoured jelly filled telephone cable in the existing trench/hume pipe/ GI pipe etc with saddels etc. complete as required.					
	i	50 Pair	Metre	50			
	ii	10 Pair	Metre	90			
		TOTAL : SUB HEAD 8:TELEPHONE SYSTEM					
		SUB HEAD 9:CONDUITING FOR COMPUTER SYSTEM .					
9.00		CONDUITING FOR COMPUTER SYSTEM .					
9.01		Supply and fixing of following sizes of rigid PVC conduit alongwith the accessories in recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required					
	i	20 mm dia	Metre	3920			
	ii	25 mm dia	Metre	980			
9.02		Supplying and fixing two module modular plate (suitable for RJ-45 computer socket) with GI box complete as required.	Each	196			

		TOTAL SUB HEAD: 9 CONDUITING FOR COMPUTER SYSTEM					
		SUB HEAD 10: CONDUITING FOR TV OUTLETS					
10.00		CONDUITING FOR TV OUTLETS					
10.01		Supply and fixing of following sizes of MS conduit alongwith the accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required					
	i	20 mm dia	Metre	140			
	ii	25 mm dia	Metre	28			
10.02		Supplying and fixing 2 module modular metal box in recess with modular cover plate including fixing 1 no. coaxial TV outlet connection and all accessories complete as required	Each	14			
10.03		Supply and drawing Coaxial TV Cable RG - 6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and potected with PVC sheath in the existing surface/ recessed steel/ PVC coduit as required.	Metre	60			
		TOTAL SUB HEAD 10: CONDUITING FOR TV OUTLETS					
11.00		SUB HEAD 11 : STAGE LIGHTING					
		STAGE LIGHTING					
11.01		Supply, Installation, Testing and commissioning of 1000W 150mm double plano-convex lens profile spot light complete with T-11 or equiv. lamps, barn door, filter frame, C-clamp, 1.5M 3x2.5 sq.mm. copper cable, plug top etc. complete.	Each	6.00			

11.02	Supply, Installation, Testing and commissioning of 1000W Solar Fresnel spot light complete with all accessories and T-11 lamp or equiv. lamps with imported glass, side/bottom sliding knob, 1.5M 3x2.5 sq.mm. copper cable, plug top etc. as required.	Each	6.00			
11.03	Supply, Installation, Testing and commissioning of 1000W Flood light complete with 1000W 189mm halogen tube and other accessories and 1.5 m. 3x2.5 sq.mm. copper cable, plug top, etc. weather proof complete.	Each	4.00			
11.04	Providing and fixing 3 Section telescopic stands made of steel tube for stage lighting mentioned above.	Each	4.00			
11.05	Supply, installation, testing and commissioning of Electronic Type Dimmer Panel with Suitable Number of circuits for controlling Compact Flourscent Lights in Auditorium duly wired with terminal strip etc with centralised knob for complete control, and five station seperate control with suitable MCB at incomer, fuse, complete with incoming cable For controlling Auditorium Hall Lights . This includes connection between control consloe and dimmer through suitable PVC copper conductor as required & its connection, connecting the existing light circuits in outgoings of the panel complete as required.	Set	1.00			

11.06	Supplying, installation, connection & commissioning of Electronic type dimmer console panel with 12 dimmers of 2.5KW each in wall mounting, sheet steel housing with 12 nos. patch panel. There shall be two plug sockets for each dimmer for controlling stage light and eight plug socket for each dimmer controlling 1000 watts spot lights . This will include connection between control console and dimmer through suitable PVC copper conductor as required including light control desk suitable for controlling the intensity of 12 channels with 2-scene preset arrangement, group & master faders, Cross Fade, flasher, chaser Music on selected channels complete as per specifications and as directed for proper functioning of the system .	Set	1.00			
	TOTAL SUB HEAD - 11.00 STAGE LIGHTING					
12.00	SUB HEAD : 12 STAGE CURTAIN					
	Stage Curtain					
12.01	Main curtain made out of velvet curtain cloth with horizontal sliding arrangement complete with fixing rails, brackets, sliding arrangement and motorised operation complete with runners, master runners, pullies, 3mm steel wire rope, motor of required capacity with 2 Nos. air breaker contactors, 2 nos. micro switches for auto stop, 3 nos. push buttons for forward, reverse and stop positions. The curtain should be draped to half area when in closed position. Min. overlap at centre should be 900mm and should be stitched in double gathering.	Set	1.00			

12.02	Providing and fixing cloth wings made out of black glazed cotton cloth fixed on 6mm thick commercial plywood fixed on one side of MS 50x25x16G pipe welded frame work. The pipe framework shall be made out of 25x50mm pipe fixed at 900mm c/c with overhead pivot track complete with duly painted framework.	Set	1.00			
12.03	Providing and fixing average frills made out of double gathering glazed cotton fabric to be installed above stage with 25mm dia. GI pipe.	Set	2.00			
TOTAL SUB HEAD : 12 STAGE CURTAIN						
13.00	SUB HEAD : 13 VIDEO PROJECTION AND PUBLIC ADDRESS SYSTEM :					
	Video Projection System For Auditorium:					
13.01	Design, supply, installation, testing & commissioning of video projection system complete with LCD technology projector system , long throw projection lens motorised screen, DVD player, RGV video data switcher with matrix and scaler including wiring for the entire system in PVC steel conduits.	Lot	1.00			
	PA SYSTEM OF AUDITORIUM :					
13.02	Supplying, Installation testing and commissioning of the complete PA system for auditorium. This should include the supply, installation, testing and commissioning of the following items and any other item required for complete functioning of the system including wiring of the same.					
	a. Floor podium Mic phone with stand.					
	b. Suspended Mic					
	c. Collar Mic					

	d.	Supplying, installation, testing and commissioning of dual channel power Amplifier according to the capacity of the auditorium.					
	e.	PA audio mixer.					
	f.	Audio Cassette Player required for smooth operation.					
	g.	5 CD Changer required for smooth operation etc. or any other item.					
		PA System as mentioned above for auditorium :	Lot	1.00			
		PA SYSTEM OF NEW BASEMENT PARKING :					
13.03		Supply, installation, testing and commissioning of public address system consisting of following equipment including all accessories complete as required. (Contractor has to design and submit the details of PA equipment as per the requirement of the under ground parking for approval). This includes conduiting with 20mm/25mm dia conduit and wiring with twin, sheilded, twisted 32/0.2 mm PVC insulated copper conductor spaeker wire in existing conduit with earth wire complete as required.					
	i	6 watt superior quality ceiling speaker with accessories.					
	ii	12 watt box cabinet speaker					
	iii	Rotary heavy duty suitable watt volume control switches with ON/ OFF facility					
	iv	Zone controller for selecting the zones as required					
	v	Table type microphone complete as required					
	vi	Mixing amplifier complete as required					
	vii	HD DVD palyer					
	viii	Equipment Rack for above equipments.					
		PA system for basement parking including all items as mentioned above.	Lot	2.00			
		TOTAL SUBHEAD 13: VIDEO PROJECTION AND PUBLIC ADDRESS SYSTEM as mentioned above.					
		SUB HEAD 14 : FIRE DETECTION AND ALARM					

14.00		FIRE DETECTION AND ALARM SYSTEM					
14.01		Supply and drawing of following sizes of PVC insulated FRLS copper conductor single core cable in surface/recessed MS conduit (including Supplying and fixing of MS Conduit) complete as required.					
	i	2X1.5 sqmm	Metre	8448			
14.02		Supply, installation, testing and commissioning of the following addressable type fire detection and alarm accessories as per technical specification & complete with connections etc. as required.					
	i	Optical type Smoke Detector	Each	351			
	ii	Heat Detector	Each	6			
	iii	Manual Break call point.	Each	46			
	iv	Fire Alarm Hooter cum speaker of suitable range to cover the complete floor, in enclosure.	Each	38			
	v	Response indicator	Each	70			
14.03		Supply, Installation, testing and commissioning of 1 loop microprocessor based addressable type networkable Fire Detection & Alarm Panel complete with inbuilt power supply, battery charger with SMF batteries for minimum 24 hours back-up. The panel shall have a communication module and HI 485 network card. The panel should have rectifier, loop card, minimum 80 character LCD unit to indicate fire/ fault signals with address including external/ internal printer to print the details complete as per technical specifications and requirement of Local Fire Authority and as required.					
			Set	2			

14.04	Supply, Installation, testing and commissioning of 2 loop microprocessor based addressable type networkable Fire Detection & Alarm Panel complete with inbuilt power supply, battery charger with SMF batteries for minimum 24 hours back-up. The panel shall have a communication module and HI 485 network card. The panel should have rectifier, loop card, minimum 80 character LCD unit to indicate fire/ fault signals with address including external/ internal printer to print the details complete as per technical specifications and requirement of Local Fire Authority and as required.	Set	1			
14.05	Supply, Installation, testing and commissioning of 3 loop microprocessor based addressable type networkable Fire Detection & Alarm Panel complete with inbuilt power supply, battery charger with SMF batteries for minimum 24 hours back-up. The panel shall have a communication module and HI 485 network card. The panel should have rectifier, loop card, minimum 80 character LCD unit to indicate fire/ fault signals with address including external/ internal printer to print the details complete as per technical specifications and requirement of Local Fire Authority and as required.	Set	2			
14.06	Supply testing and commissioning of isolator module as per specifications.	Set	26			
14.07	Supply, Installation, testing and commissioning of addressable control modules.	Each	12			
14.08	Supply, Installation, testing and commissioning of addressable monitor modules.	Each	7			

14.09	Supply, Installation, testing and commissioning of flow switch	Each	4			
14.10	Supplying, drawing, connecting, testing & commissioning of 4 core, 1.5 sq. mm ,1100 volts FRLS copper conductor with PVC armoured cable with steel brading for mechanical protection and over all shielded with aluminium myler tape complete as required.	Metre	500			
14.11	Supply, installation, testing and commissioning of 4 zone microprocessor based talkback master control panel with LCD display , inbuilt battery charger and battery space .The panel should have LCD and LED display for zone wise calling , & fabricated with 16 SWG sheet metal housing with red paint .	Each	1			
14.12	Supply, installation, testing and commissioning talkback unit with telephone handset in 16 SWG red body housing with locking protection.	Each	4			
	TOTAL SUB HEAD 14 : FIRE DETECTION AND ALARM					
	SUB HEAD 15: LIGHTENING PROTECTION					
15.00	LIGHTENING PROTECTION					
15.01	Earthing with 600 mm X 600 mm X 6 mm thick GI plate including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required.	Set	8			
15.02	Extra for using charcoal and salt for GI or copper plate earth electrode as required.	Set	8			

15.03	Providing and fixing of lightening conductor finial, made of 25mm. dia. 300mm., long GI tube, having single prong at top, with 85 mm. dia. 6 mm. thick GI base plate including holes etc. complete as required.	Each	28				
15.04	Providing and and fixing GI tape 20mm X 3 mm thick on parapet or surface of wall for lightning conductor as required. (For horizontal runs).	Metre	380				
15.05	Providing and and fixing GI tape 20mm X 3 mm thick on parapet or surface of wall for lightning conductor as required. (For vertical runs).	Metre	228				
15.06	Providing and fixing testing joint, made of 20mmX3mm thick GI strip, 125 mm. long, with 4 no.'s of GI bolts, nuts, check nuts, bar shaddles, and spring washers etc. complete as required.	Each	8				
15.07	Providing and laying GI tape, 32 mm X 6 mm thick, from test joint upto earth electrode directly in ground as required.	Metre	120				
	TOTAL SUB HEAD 15: LIGHTENING PROTECTION						
	SUB HEAD 16 : LIFTS						
16.01	Design, manufacture, supply, installation, testing and commissioning of following 10 passenger (680 kg) lift , serving different floors in the lift shaft including lift well pressurization. The lift should be as per detailed specification/ drawing enclosed as required and as under:						
	- Speed : 1.5 MPS						
	- Travel: As per architectural drawing.						
	- Controller: A.C. variable voltage & variable frequency						

	-	Automatic rescue device complete with dry maintenance free batteries as required.					
	-	Operation: Microprocessor based single automatic push button/ simplex selective collective/duplex collective selective with / without attendant.					
	-	415 V, 3 phase, 50 Hz, 4 wire system					
	-	Type of doors: a) Car : Power operated, centre opening for passenger lift horizontal sliding stainless steel scratch proof. (b) Landing doors: Stainless steel scratch proof. Lift car door and landing doors shall have a fire resistance of one hour.					
	-	A hand rail guide not less than 600 mm long at 900 mm above floor level .					
	-	Mirror of suitable size to be fixed inside the lift car.					
	-	Voice announcement system in the car to announce the position of the elevator in the hoistway as the car passes or stops at a floor served by the elevator.					
	-	Telephone with minimum two connections one at operator's room and other at guard/ security room and the emergency signal with re-chargeable batteries as source of supply be made in the lift car.					
	-	Toe guard, PA speaker, IR curtain on full height, two phase fireman's drive control/ switch and potential free contacts etc to be provided in the lift.					
		Various 10 Passenger Lift serving following floors , stops & openings as mentioned below:					
	i	Floors : B1+B2+G+6 (Total eight floors) , 9 stops & 9 openings	Each	4.00			
		TOTAL SUB HEAD 16: LIFTS					
		SUB HEAD 17: LT CABLES					
17.00		LT CABLES					

17.01		Supply of following sizes of 1.1 kV grade multicore aluminium conductor PVC sheathed armoured AYYFY cable as per IS 1554.					
	i	3.5 Core 25 Sqmm.	Metre	140			
	ii	3.5 Core 35 Sqmm.	Metre	600			
	iii	3.5 Core 50 Sqmm.	Metre	765			
	iv	3.5 Core 70 Sqmm.	Metre	170			
	v	3.5 Core 95 Sqmm.	Metre	490			
	vi	3.5 Core 120 Sqmm.	Metre	192			
	vii	3.5 Core 185 Sqmm.	Metre	320			
	viii	3.5 Core 300 Sqmm.	Metre	1856			
	ix	3 Core 4 Sq mm	Metre	156			
	x	4 Core 16 Sq mm	Metre	125			
	xi	2 Core 10 Sq mm	Metre	810			
	xii	2 Core 16 Sq mm	Metre	710			
17.02		Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required					
	i	Size not exceeding 25 sq.mm	Metre	1106			
	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	Metre	1425			
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	Metre	2176			
17.03		Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade direct in the existing RCC/Hume/Stoneware/Metal pipe as required					
	i	Size not exceeding 25 sq.mm	Metre	210			
	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	Metre	275			
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	Metre	255			
17.04		Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade on surface or on existing cable tray complete as required.					

	i	Size not exceeding 25 sq.mm	Metre	55			
	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	Metre	90			
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	Metre	100			
17.05		Supplying and making end termination with suitable size Copper lugs including double compression glands of following sizes of 1.1. kv grade multicore aluminium conductor PVC insulated and PVC sheathed					
	i	3.5 Core 25 Sqmm.	Each	22			
	ii	3.5 Core 35 Sqmm.	Each	2			
	iii	3.5 Core 50 Sqmm.	Each	8			
	iv	3.5 Core 70 Sqmm.	Each	4			
	v	3.5 Core 95 Sqmm.	Each	8			
	vi	3.5 Core 120 Sqmm.	Each	4			
	vii	3.5 Core 185 Sqmm.	Each	12			
	viii	3.5 Core 300 Sqmm.	Each	30			
	ix	3 Core 4 Sq mm	Each	34			
	x	4 Core 16 Sq mm	Each	14			
	xi	2 Core 10 Sq mm	Each	28			
	xii	2 Core 16 Sq mm	Each	38			
17.06		Fabricating and installing following size of perforated M.S. cable trays including horizontal and vertical bends, reducers, tees, cross members and other accessories as required and duly suspended from the ceiling with M.S. suspenders and including painting etc. as required :-					
	i	150 mm. width x 50 mm. depth x 1.6 mm. thickness	Metre	310			
	ii	300 mm. width x 62.5 mm. depth x 2.0 mm. thickness	Metre	80			
	iii	450 mm. width x 62.6 mm. depth x 2.0 mm. thickness	Metre	175			
	iv	600 mm. width x 62.6 mm. depth x 2.0 mm. thickness	Metre	160			
		TOTAL SUB HEAD 17 : LT CABLES					
		SUB HEAD 18: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS					

18.00	EARTHING, SAFETY EQUIPMENTS AND MISC. ITEMS						
18.01	Earthing with copper plate 600mmX600mmX3mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required	Set	16				
18.02	Earthing with GI plate 600mmX600mmX6mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required	Set	18				
18.03	Extra for using charcoal and salt for GI or copper plate earth electrode as required.	Set	34				
18.04	Earthing with GI earth pipe 4.5 mtr long, 40 mm dia including accessories and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) as required.	Set	3				
18.05	Earthing with GI earth pipe 4.5 mtr long, 40 mm dia including accessories and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal and salt as required.	Set	3				
18.06	Supplying and laying 25mmX5mm GI strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	350				
18.07	Providing and fixing 25mmX5mm GI strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	80				

18.08		Providing and fixing 25mmx5mm G.I. strip in 40mm dia G.I. pipe from earth electrode as required.	Metre	25			
18.09		Providing and fixing 25mmX5mm Copper strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	330			
18.10		Supplying and laying 25mmX5mm Copper strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	90			
18.11		Providing and fixing 25mmx5mm copper strip in 40mm dia G.I. pipe from earth electrode as required.	Metre	60			
18.12		Providing and laying of following sizes non pressure NP2 class (light duty) RCC pipe with collar joint with stiff mixture of cement (1 cement : 2 fine sand) including testing the joints etc. as required.					
	i	150mm dia	Metre	325			
	ii	300mm dia	Metre	470			
18.13		Providing and fixing M.V. danger notice plate of 200mmX150mm made of mild steel, atleast 2mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required.	Each	14			
18.14		Supplying and laying of 1.1kV grade 1 metre wide anti skid chequered type rubber mat.	Metre	100			
18.15		Supplying and laying of 12kV grade 1 metre wide anti skid chequered type rubber mat.	Metre	30			

18.16	Supply and fixing shock treatment chart in English, Hindi and local language mounted on 5mm thick Plywood and 3mm thick plain glass front complete as required.	Set	11			
18.17	Supplying and fixing CO2 type 4.5 Kg capacity fire extinguishers as approved by ISI complete as required.	Set	23			
18.18	Supplying and fixing CO2 type 9 Kg capacity trolley mounted fire extinguishers as approved by ISI complete as required.	Set	6			
18.19	Supplying and fixing Foam type 9 ltrs capacity fire extinguishers as approved by ISI complete as required.	Set	6			
18.20	Supplying and fixing Foam type 50 ltrs capacity fire extinguishers trolley mounted as approved by ISI complete as required.	Set	2			
18.21	Supplying, storing, handling and fixing in position First Aid Medical Box and an 'Artificial Respirator' complete as per technical specifications as required.	Each	3			
18.22	Supply and testing of 11kV ISI marked hand gloves	Set	3			
18.23	Providing & fixing rigid PVC pipe complete with fittings, clamps including trenching & refilling/ wall cutting & plastering, etc. (for cable entry) with all minor civil & mech. Works complete as required.					
	50 mm dia nominal bore	Metre	370			
	TOTAL SUB HEAD 18: EARTHING, SAFETY EQUIPMENT AND MISC. ITEMS					
	SUB HEAD 19: OUT DOOR LIGHTING					

19.00		OUT DOOR LIGHTING					
19.01		Supply, erection, testing and commissioning of external swaged steel tubular pole with following specifications & items :					
	i	9.0 Mtrs. high swaged steel tubular pole (Single arm of suitable length each around 1.5 Metre), the construction of the pole shall be as per IS 410 SP-33 with base plate 450mmX450mmX6mm complete as per requirement with two coats of spray paints (shade as approved)					
	ii	1X150 watts street light fixture with 150watts high pressure sodium vapour (HPSV) lamp complete with control gear, acrylic cover cover etc. and its wiring with 2X4 sq.mm. PVC insulated, FRLS copper conductor and 1,5 sqmm PVC insulated, FRLS copper earth wire from control box complete as required - 1 No. (Philips SPX 086/150 or approved equivalent)					
	iii	Suitable size 32 A DP MS Control box with 2 no. incoming and outgoing terminals and 2 nos. tap-out terminal with 6A DP MCB complete as required - 1 Set					
	iv	Suitable number(s) 40mm dia Class-B GI Pipe(s) from above control box to upto 0.5 metre below ground level for power cable entry					
	v	Providing foundation including excavation, shuttering, alingment of poles, casting etc. including lean concrete at the bottom as per CPWD/ BIS specifications.					
	vi	The above installations shall be completed as CPWD specifications and as required					
	A.	Steet Tubular Poles(9M) Single Arm as mention above	Set	20			
	B.	Steet Tubular Poles (9M) same as above but for Double Arm as mention above	Set	25			

19.02	Supply, installation, testing and commissioning of external post top lantern with following accessories and complete as required :					
i)	4m high (3.3m above ground) 50mm dia GI pole as approved, adopting socket at top for fixture mentioned below, base plate 300 x 300 x 6mm and provision for mounting junction box etc. - 1 set.					
ii)	Supply, installation, testing and commissioning of Post top lantern with 70W HPSV lamp (Philips SPC 106/70(I) HPF or equivalent) and its wiring with 2 x 2.5 sq.mm PVC insulated copper wire and 1.5 sqmm PVC insulated copper earth wire from control box - 1 set.					
iii)	Suitable size 20A DP MS Control box with 2 no. incoming and outgoing terminals and 2 nos. tap-out terminal with 1 nos. 5A HRC fuses complete 1 set.					
iv)	Suitable number(s) 40mm dia Class-B GI Pipe(s) from above control box to upto 0.5 metre below ground level for power cable entry					
v)	Providing 400x400x1000mm deep 1:3:6 ratio cement concrete including excavation shuttering alignment of poles casting etc. including 100mm thick lean concrete shall be provided at the bottom					
	Supply, installation, testing and commissioning of external post top lantern as mentioned above	Set	10			
19.03	Supply, installation, testing and commissioning of bollard lamps 1X18 watts CFL (Philips HCS360 1XPL-C/2P 18W GR Sonara bollard in gree color or equivalent) control box - 1 set.	Each	15			
19.04	Supply, installation, testing and commissioning of bollard lamps 1X18 watts CFL (Philips HCS 370 1XPL-L 18W GR Lumos bollard in green color or equivalent) control box - 1 set.	Each	10			

19.05	Road Lighting Panel					
	Supply, installation, testing and commissioning of following outdoor type with canopy, IP-54 protected M.V. cubicle type totally enclosed, free standing type, dust, damp and vermin proof, MV Panel, busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, stove enamelled painted and having following incoming and outgoing switchgears complete as required.					
	INCOMER:					
	1 No. 63 Amp 415 volts, TPN Switch Disconnecter Fuse Unit with HRC Fuses					
	1 Set of phase indicating lamp with HRC fuses					
	1 Set of photo sensor & 100A TP contactor with neutral link (for street lights control) .					
	BUSBARS:					
	100 Amp TPN Aluminium busbars					
	OUTGOING:					
	10 Nos. 32 Amp 415 volts, DP MCB					
	Feeder Pillar as mention above	Set	1			
19.06	Spiral earthing made out of 6 SWG GI wire , 50mm Dia, 115 turns closely wound ,1.5 mtr below ground, earth pit of 350 Dia., 1.5 mtr depth including providing charcoal and salt for earthing at alternate layers of 300 mm depth (total 3 layers),connections etc. complete as required.	Set	25			
	TOTAL SUB HEAD 19: OUTDOOR LIGHTING					
	SUBHEAD 20 : BOOM BARRIER					
20.00	BOOM BARRIER :					

	i	Supply, Installation, testing & commissioning of automatic standard boom barrier with 6 metre arm length of aluminium alloy rectangular or circular profile & housing should be MS with powder coating. The boom barrier should be with motorised arrangement with PLC based motion controller. It should have position sensors for restricting the boom to cross extreme positions. It should detect movement of vehicle & boom should be prevented from lowering when vehicle is in exit area. The operating time should be 2 to 5 secs.	Each	4			
		TOTAL SUB HEAD 20: BOOM BARRIER					
		GRAND TOTAL FOR ALL ELECTRICAL WORKS					

BILL OF QUANTITY

HVAC WORKS

	<u>RAJKUMARI AMRIT KAUR NURSING COLLEGE, NEW DELHI</u>		
	<u>SUMMARY SHEET FOR HVAC WORKS</u>		
SECTION	DESCRIPTION OF WORK	AMOUNT (Rs.)	AMOUNT IN WORDS (Rs.)
A	EQUIPMENTS		
B	PIPING		
C	AIR DISTRIBUTION		
D	INSULATION		
E	ELECTRICAL		
	GRAND TOTAL		

BILL OF QUANTITIES FOR RAJKUMARI AMRIT KAUR NURSING COLLEGE, NEW DELHI - HVAC WORKS						
Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
The prices are to be quoted in the below mentioned form and shall include the supply, installation, testing & commissioning at site of all the equipments, ancillary materials as specified and all such items what so ever which may be required to fulfill the intent and purpose as laid down in the specifications and or the drawings.						
The tenderer shall quote rates in figures and in words under column 5&6 and extend amount to column 7						
A)	<u>EQUIPMENTS</u>					
1.0	WATER CHILLING UNITS.					
1.1	Supply, installation, testing & commissioning of 70 TR capacity (actual capacity) water cooled water chilling units as specified and shown in equipment schedule complete as per specifications with.					
	a. Scroll Compressors with motor.					
	b. Drive package.					
	c. Mounting frames for all components					
	d. Water cooled condenser with accessories.					
	e. Chiller with accessories.					
	f. Refrigerant piping, fittings, accessories and valves etc.					
	g. Insulation of chiller and suction line.					
	h. First charge of refrigerant and oil.					
	i. Base frame with Vibration isolators					
	j. Automatic capacity control arrangement.					
	k. Lot Safety controls, flow switches, pressure gauge, thermometer etc. as per specifications.					
	l. Suitable capacity motor with necessary insulation , starter panel complete with all necessary switchgears and control complete as required					
	m. Necessary water drain & air purge valves wherever required					
	n. Necessary lubrication device as per specifications complete.					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	o. Microprocessor based control panel complete with accessories as per specifications.					
	Chilled Water Leaving temp. 44 deg. F Chilled Water Entering temp. 54 deg. F Chiller fouling factor = 0.0005 (FPS units)					
	Condenser Water Leaving Temp. 97.5 deg F Condenser Water Entering Temp. 90 deg F Condenser fouling factor = 0.001 (FPS units)					
	Complete water chilling machine as above(2W+1S)	3	Nos			
2.0	WATER CIRCULATION PUMPS					
2.1	Chilled Water Pumps					
	Supply, installation, testing and commissioning of vertical split casing end suction type centrifugal chilled water pump sets factory assembled and tested for rated efficiency mounted on a common base frame etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating/cathodic electro deposit (CED) type coating inside and outside casing etc. of chilled water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.					
	The pump characteristic shall be as follows:					
	Water flow rate=168 USGPM Head = 24 Metre WC					
	Primary chilled water pumps as described above. (2W+1S)	3	Nos			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
2.2	Condenser water Pumps					
	Supply, installation, testing and commissioning of vertical split casing end suction type centrifugal pump sets factory assembled and tested for rated efficiency mounted on a common base frame etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating/cathodic electro deposit (CED) type coating inside and outside casing etc. of chilled water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.					
	The pump characteristic shall be as follows:					
	Water flow rate=280 USGPM					
	Head = 20 Metre WC					
	Condenser water pumps as described above. (2W+1S)	3	Nos.			
2.3	Hot water Pumps					
	Supply, installation, testing and commissioning of vertical split casing type centrifugal hot water recirculation pump sets factory assembled and tested for rated efficiency mounted on a common base etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating/cathodic electro deposit (CED) type coating inside and outside casing etc. of chilled water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply. The pump characteristic shall be as follows:					
	Water flow rate=60 USGPM					
	Head = 20 Metre WC					
	Hot water pumps as described above. (1W+1S)	2	Nos			
3.0	COOLING TOWER					
	Supply, installation, testing and commissioning of induced draft FRP type cooling towers for air conditioning system. Each tower shall be complete with distribution system, filling, louvers, steel ladder, fan and motor. Motor shall be IP 55 suitable for outdoor installation, 415±10% volts, 50 Hz, 3 phase power supply. Isolator enclosed in weather proof panel complete with earthing shall be included. Tower shall be selected on basis of water temperature 97.5 -90 degree F, ambient wet bulb 83 deg F and water flow rate 280 US gpm. Cooling tower fan motor shall be compatible for working with BMS.capacity shall be as follows:-					
	90 TR capacity					
	Cooling Tower as described above. (2w+1s)	3	Nos.			
4.0	Hot Water Generator					
	Supply, installation, testing & commissioning of Electric Hot Water Generator for winter heating/monsoon reheating system. Hot water shall be with IP 55 protection and compatible with controls, sensors, control cabling, piping and fittings, thermal insulation, BMS control, base frame etc. as per specifications.					
	Capacity : 75 KW					
	Status : 1(W)					
	USGPM: 60					
	Temp IN/OUT : 45/50 Deg C	1	Nos.			
5.0	AIR HANDLING UNITS					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of draw through type Air Handling Units (double skin type) of horizontal /vertical type as specified & shown in schedule of equipment complete with the following :-					
	a. Fan Section and canvas connection,Mixing Box, Thermal break profile. (double skin type)					
	b. Centrifugal blower					
	c. Coil section with cooling coil/s as per specifications.					
	d. Pre filters with filter section as required in all AHUs.					
	e. Fine and hepa filters with filter section wherever specifically specified as per AHU schedule .Wherever fine/hepa filters are specified, item shall include factory fabricated double skin plenum of same specifications as AHU panels and complete with filter frameworks.Fine/hepa filter section along with discharge plenum shall be part of AHU in upper tier.					
	f. Drain pan, drain connection.					
	g. Squirrel cage induction IP 55 TEFC drive motor, drive arrangement, guard etc.All AHU motors shall be compatible for working with VFD.					
	h. Necessary vibration isolators & supporting arrangement.					
	i. Fresh air intake arrangement,necessary water drain & air purge valves wherever required etc.					
	j. Canvass connections,necessary foundations, 2 nos pressure gauge, 2 nos thermometer etc					
	k Controls for AHUs comprising of a set of 3 way modulating proportional linear type motorised diverting/ mixing valve of required size having manual override facility alongwith proportional thermostat & wiring for interconnection with 1.5 sq. mm Cu Conductor multicore armoured complete as required.					
5.1	AH-GF-1 - 9500cfm/ 4RD Cooling Coil/2RD Heating Coil/50 mm static	1	Nos.			
5.2	AH-GF-2 - 7500cfm/ 4RD Cooling Coil/2RD Heating Coil/50 mm static	1	Nos.			
5.3	AH-GF-3 - 6400cfm/ 4RD Cooling Coil/2RD Heating Coil/50 mm static	1	Nos.			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
5.4	AH-FF-1 -5000cfm/ 4RD Cooling Coil/2RD Heating Coil/50 mm static	1	Nos.			
5.5	AH-FF-02- 10000cfm/ 4RD Cooling Coil/2RD Heating Coil/50 mm static	1	Nos.			
6.0	Heat Recovery Ventilators					
	Supply, installation, testing & Commissioning of HRV units,as per layout drawings with Imported Remote controllers (Corded) for operation of HRV Units					
6.1	HRV Units - 2630 CFM	1	Nos.			
6.2	HRV Units - 1100 CFM	2	Nos.			
6.3	HRV Units - 800 CFM	1	Nos.			
6.4	HRV Units - 600 CFM	1	Nos.			
7.0	SPLIT AIR CONDITIONERS					
	Supply , installation , testing and commisioning of HI wall split air conditioner comprising of the following.					
	a) Outdoor condensing Units					
	b) Indoor Evaporative Units					
	c) Interconnecting Refrigerant and drain piping with insulation wherever required, refrigerant and oil. The unit shall include refrigerant piping, power cabling and drain piping.					
	c) Safety and operational controls					
	e) Hiwall splits shall be suitable for single phase power supply and complete with voltage stablizer.					
	f) Mounting arrangement and structural supports for outdoor unit are included.					
	g) The units should have atleast 3 star rating from BEE.					
7.1	Capacity : 1.5 TR	2	Nos.			
7.2	Capacity : 2.0 TR	27	Nos.			
8.0	Window Air Conditioner					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply , installation , testing and commisioning of Window Acs complete with transformer, electrical cabling as required along with mounting arrangement,Voltage stablizer.Complete in all respect as per specifications. The units should have minimum 3 star rating from BEE.					
	Capacity :					
8.1	1.0 TR	2	Nos.			
8.2	1.5 TR	12	Nos.			
8.3	2.0 TR	1	Nos.			
9.0	Inline Fans					
	Supply, installation, testing and commissioning of Inline Fans as shown in drawings and as per equipment schedule . Each fan shall be complete with centrifugal blowers, totally enclosed fan cooled motor. Fan motor shall be suitable for single phase, 220 +/- 6% V, 50 Hz AC supply. Item shall be complete with starter & cabling.					
	Inline Fans					
9.1	Air Quantity :700 CFM Static Pressure :20 mm wg	1	Nos.			
9.2	Air Quantity :350 CFM Static Pressure :20 mm wg	3	Nos.			
10.0	Propeller fans					
	Supplying, installing, testing and commissioning of direct driven Propeller fan for exhaust air as shown in drawings. Each fan shall be complete with permanent split capacitor or shaded pole motor, mounting plate, accessories like wire guard, bird screen and fixed louvers for weather protection as required. Fan selection arrangement and Electrical characteristics shall be as follows:					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
10.1	300 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	16	Nos			
10.2	225 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	19	Nos			
10.3	150 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	18	Nos			
11.0	Tube Axial Fans Supply, installation,testing and commisioning of tube axial flow fans as shown in drawings, Each fan shall be direct driven.. Fan motor shall be suitable for 3 Phase, 415+/- 10% V, 50Hz AC supply . Fan shall be complete with gravity louvers. Fan shall be 250 deg C, 2hrs fire rated.					
11.1	Duty: Hostel Lift well pressurisation Air Quantity : 9000 CFM Static Pressure : 25 mm wg	2	Nos.			
11.2	Duty: Hostel Lift lobby pressurisation Air Quantity : 8000 CFM Static Pressure : 30 mm wg	2	Nos.			
11.3	Duty: Academic Lift well pressurisation Air Quantity : 9000 CFM Static Pressure : 25 mm wg	4	Nos.			
11.4	Duty: Academic Lift lobby pressurisation Air Quantity : 8000 CFM Static Pressure : 30 mm wg	5	Nos.			
11.5	Duty: Auditorium Exhaust Air Quantity : 5500 CFM, 20 mm st. pr.	4	Nos.			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
11.6	Duty: Auditorium Lobby & Entrance Foyer Exhaust Air Quantity : 2250 CFM, 20 mm st. pr.	8	Nos.			
11.7	Duty: Academic Basement Ventilation Air Quantity :10700 CFM, 25 mm st. pr.	2	Nos.			
11.8	Duty: Academic Basement Ventilation Air Quantity :16000 CFM, 25 mm st. pr.	2	Nos.			
11.7	Duty: Basement Ventilation Air Quantity :20000 CFM, 25 mm st. pr.	16	Nos.			
11.8	Duty: Basement Ventilation Air Quantity :27000 CFM, 25 mm st. pr.	32	Nos.			
12.0	EXPANSION TANK					
	Supply, installation, testing and commissioning of pressurised PVC., expansion tank of following capacities made of PVC 2 layer sheet complete with 50 mm thick fire retardant type 32 kg/mt cu density TF quality expanded polystyrene insulation finished with two layers of sand cement plaster and painted complete with vent, drain connections , float valve, quick fill connection, manhole cover etc as specified. (Of double layered Sintex or equivalent make).					
12.1	1000 ltrs. (for chilled water circuit)	1	No.			
12.2	500 ltrs. (for hot water circuit)	1	No.			
B)	PIPING					
13.0	CONDENSER WATER PIPING & VALVES					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, laying/fixing, testing and commissioning of M.S. heavy class ERW piping confirming to IS : 3589/IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly painted as per specifications :					
13.1	150 mm dia	40	RM			
13.2	125 mm dia	60	RM			
13.3	100 mm dia	20	RM			
13.4	80 mm dia	40	RM			
13.5	50 mm dia	50	RM			
14.0	Valves					
14.1	Butterfly valves :					
	Supply, fixing and testing of following valves, strainers, in the chilled water piping complete with companion flanges, nut bolts, gaskets, supports etc. duly insulated and painted as per specifications:					
14.1.1	150 mm dia	3	Nos			
14.1.2	125 mm dia.	18	Nos			
14.1.3	100 mm dia.	2	Nos			
14.1.4	50 mm dia.	6	Nos			
14.2	Balancing valves :					
14.2.1	125 mm dia.	6	Nos			
14.3	Non return/Check valves :					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
14.3.1	125 mm dia.	3	Nos			
14.4	Pot strainer with drain valve					
14.4.1	150 mm dia	1	Nos			
14.5	Y- strainer with drain valve					
14.5.1	125 mm dia.	3	Nos			
15.0	CHILLED WATER PIPING					
	Supply, laying/fixing, testing and commissioning of M.S. heavy class ERW piping confirming to IS : 3589/IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly insulated and painted as per specifications :					
15.1	125 mm dia	140	RM			
15.2	100 mm dia	20	RM			
15.3	80 mm dia	100	RM			
15.4	65 mm dia	80	RM			
15.5	50 mm dia	40	RM			
15.6	40 mm dia	60	RM			
15.7	32 mm dia	40	RM			
15.8	25 mm dia	40	RM			
15.9	20 mm dia	45	RM			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
16.0	VALVES & STRAINERS					
	Supply, fixing and testing of following valves, strainers, in the chilled water piping complete with companion flanges, nut bolts, gaskets, supports etc. duly insulated and painted as per specifications:					
16.1	Butterfly valves :					
16.1.1	125 mm dia.	2	Nos			
16.1.2	80 mm dia.	14	Nos			
16.1.3	65 mm dia	12	Nos			
16.1.4	50 mm dia.	2	Nos			
16.1.5	32 mm dia	4	Nos			
16.1.6	20 mm dia	6	Nos			
16.2	Balancing valves :					
16.2.1	125 mm dia.	1	Nos			
16.2.2	80 mm dia.	4	Nos			
16.2.3	65 mm dia	5	Nos			
16.2.4	50 mm dia.	1	Nos			
16.2.5	32 mm dia	2	Nos			
16.2.6	20 mm dia	3	Nos			
16.3	Non return/Check valves :					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
16.3.1	80 mm dia	3	Nos			
16.3.2	65 mm dia.	2	Nos			
16.4	Y- strainers with drain valve					
16.4.1	80 mm dia.	4	Nos			
16.4.2	65 mm dia	5	Nos			
16.4.3	50 mm dia.	1	Nos			
16.4.4	32 mm dia	2	Nos			
16.4.5	20 mm dia	3	Nos			
16.5	Providing and fixing in position the following Gate Valves duly insulated as per specifications:					
16.5.1	50 mm dia Valves	4	Nos.			
16.5.2	40 mm dia Valves	4	Nos.			
16.5.3	32 mm dia Valves	4	Nos.			
16.6	Supply, installation, testing and commissioning cooling thermostats :-					
16.6.1	For AHUs	5	Nos.			
17.0	DRAIN PIPING					
	Supply, laying/fixing, testing and commissioning of G.I. medium class ERW piping confirming to IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly insulated and painted as per specifications for condensate drain from air handling units and chillers etc.					
17.1	50 mm dia	40	RM			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
17.2	40 mm dia	60	RM			
17.3	32 mm dia	60	RM			
17.4	25 mm dia	80	RM			
17.5	20 mm dia	50	RM			
18.0	On-line non-chemical water treatment system					
	Supply, Installation, Testing and Commissioning of On line, Non-Chemical Water Treatment Scale Preventor System for 70 TR Chiller, having flow rate 280 USGPM	3	Nos.			
C)	<u>AIR DISTRIBUTION</u>					
19.0	GSS DUCTING					
	Supply, installation, testing, commissioning and balancing of G.S.S ducting of following thickness including necessary supports, hangers, nut bolts, gaskets, splitter dampers, vanes canvass connections etc. complete as per specifications & drawings:					
19.1	1.25 mm(18 G) GSS	2070	Sqm.			
19.2	1.0 mm (20 G) GSS	1680	Sqm.			
19.3	0.80 mm (22 G) GSS	1270	Sqm.			
19.4	0.63 mm (24 G) GSS	2450	Sqm.			
20.0	Duct Silencer					
	Supply, installation, testing, commissioning and balancing of duct silencer in both supply & return air ducting with heavy gauge GI sheet with acoustic insulation material, inside GI perforated sheet all complete as per specifications & shop drawings etc.	15	Sqm.			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
21.0	FIRE DAMPERS					
	Supply, installation, testing and commissioning of motorized combined smoke & fire dampers made out of GI sheet of at least 120 minutes fire rating complete with GI damper of required size, smoke sensor, etc as per specifications and shop drawings.					
21.1	Fire/smoke Damper	8	Sqm			
21.2	Actuator & control panel	10	sets			
22.0	VOLUME CONTROL DAMPERS					
	Supply, installation and testing of volume control dampers of GI sheet, box type to be provided in ducts complete with suitable links, levers and quadrants for manual control of air volume and air balancing as per specifications and drawings.					
		32	Sqm.			
23.0	CEILING DIFFUSERS					
23.1	Supply, Installation, testing and balancing of square/circular supply air diffusers of powder coated aluminium construction with attached volume control dampers as per specs. and drawings.	12	Sqm.			
23.2	Supply, installation, testing and balancing of square/circular return air diffusers of powder coated aluminium construction without volume control dampers as per specifications and drawings	12	Sqm.			
24.0	GRILLES					
24.1	Supply, installation, testing and balancing of supply/return air grilles with/without volume control dampers of powder coated aluminium construction suitable for installation in walls, false ceiling boxing etc as per specifications and drawings.					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
24.1.1	Supply air grilles in single louvers with volume control dampers.	12	Sqm.			
24.1.2	Return air grilles in single louvers without volume control dampers.	22	Sqm.			
24.2	Supply, installation, testing and balancing of powder coated extruded M.S. Air Grilles with / without volume control dampers.					
24.2.1	Supply air grilles in single louvers with volume control dampers.	30	Sqm.			
24.2.2	Exhaust air grilles in single louvers without volume control dampers.	30	Sqm.			
24.2.3	Painted metal jali with M.S. frames for the duct termination in the blower room.	18	Sqm.			
25.0	LINEAR GRILLES					
	Supply, installation,testing and balancing of air linear grilles of powder coated aluminium construction suitable for installation in walls/false ceiling, boxing etc as per specifications and drawings.	5	Sqm.			
26.0	GRILLE DAMPERS					
	Supply, installation and balancing of aluminium construction volume control dampers for linear grills.	5	Sqm.			
27.0	FRESH AIR GRILLES with bird screen					
	Supply, installation,testing and balancing of extruded aluminium fresh air grilles with louvers and bird screen as per specification and drawings.	14	Sqm.			
28.0	Pan type Humidifier					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of electric pan type humidifiers in each Air Handling Rooms to provide humidification during winter months heating operation. The humidifier shall evaporate 12 liters water per hour and complete with all required water valves incoming MCB, humidistat and ,electrical & control wiring and earthing as required.					
28.1	9 KW	3	Sets			
28.2	6 KW	2	Sets			
D)	INSULATION					
29.0	DUCT INSULATION					
	Supply and fixing resin bonded fibre glass insulation on supply/return air ducts covered with polythene and finished as specified.					
29.1	50 mm thick insulation (For duct in Non AC area)	250	Sqm.			
29.2	25 mm thick insulation (For duct in AC area)	600	Sqm.			
30.0	DUCT ACOUSTIC LINING					
	Supply,application and fixing of resin bonded fibre glass hard board acoustic insulation in supply air ducting/plenum covered with tissue paper and perforated aluminium sheet as specified.	400	Sqm.			
31.0	PLANT ROOMS ACOUSTIC INSULATION					
	Supply and fixing of acoustic insulation on walls and ceiling of Air handling units rooms with 50mm thick resin bonded fibre glass slabs fixed in frame work and finished with vapour barrier and perforated aluminium sheet complete as per specifications and drawings.	500	Sqm.			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	E) ELECTRICAL					
32.0	AIR- CONDITIONING PANELS					
	All bill of items are to be read in conjunction with specifications and drawings.					
	Supply, installation, testing and commissioning of A/C panels suitable for 415 V, 3 phase, 4 wires, 50 Hz power distribution system. The panel shall be cubicle non draw out type free standing floor mounting sheet metal enclosed flush front with aluminium busbars, separate earth bus bars to be provided throughout the length of the panel. The incoming & outgoing feeder breakers, fuses, indicating lamps etc. shall be accommodated in a modular multitier arrangement. The painting shall be done as per relevant IS codes as specified in the specifications. Adequate size cable alley shall be provided all round the panel and in the back for each cable bending and termination. The outgoing feeders inside the panel shall be connected through solid bus bar. Flexible cable links are not acceptable. Bus bars shall be provided with sleeves or heat resistant insulated paint. The panel shall be suitable for cable entry from top. The panel shall be fabricated after the approval of fabrication drawings. All the panels shall have minimum 20% spare capacity.					
	i) All doors to have pad locking and shrouding arrangement.					
	ii) All switches to be heavy duty type base mounted having operating handle.					
32.1	Main/ Emergency Air-conditioning MCC in plant room in basement					
	INCOMER					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 no 800 Amp 415 volts, 50 KA (Isc), FP MCCB with Microprocesssor release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS.For water chilling machine.(3W)					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.					
	Push button to CLOSE the ACB.					
	1 Set of A meter with ASS and CTs.					
	BUSBARS :1200 A TPN					
	OUTGOING					
i)	3 nos 250 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS.For water chilling machine.(3W)					
ii)	1 nos 160 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS.For hot water genetators.(1W)					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
iii)	2 nos 250 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS.For Airhandling Panel AHP1.(1W+1S)					
iv)	3 Nos. 63 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 10 HP Condenser water pumps.(3W)					
v)	8 Nos. 32 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 7.5 HP Chilled water pumps 03 nos. and CT fans 03 nos..(6W+2S)					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
vi)	2 Nos. 32 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 5 HP Hot water pumps 02 nos.(2W)					
	Complete panel as above	1	No.			
32.2	AHU MAIN DISTRIBUTION PANEL (in Auditorium)					
	Supply, installation, testing and commissioning of AHU panel suitable for 415 V, 3 phase, 4 wires, 50 Hz power distribution system. The panel shall be cubicle non draw out type free standing floor mounting sheet metal enclosed flush front with aluminium busbars, separate earth bus bars to be provided throughout the length of the panel. The incoming & outgoing feeder breakers, fuses, indicating lamps etc. shall be accommodated in a modular multitier arrangement. The painting shall be done as per relevant is codes as specified in the specifications. Adequate size cable alley shall be provided all round the panel and in the back for each cable bending and termination. The outgoing feeders inside the panel shall be connected through solid bus bar. Flexible cable links are not acceptable. Bus bars shall be provided with sleeves or heat resistant insulated paint. The panel shall be suitable for cable entry from top. The panel shall be fabricated after the approval of fabrication drawings.All the panels shall have minimum 20%spare capacity.					
	i)All doors to have pad locking and shrouding arrangement.					
	ii)All switches to be heavy duty type base mounted having operating handle.					
32.2.1	AHU PANEL AHP I					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	INCOMER					
	01 nos. 250 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.					
	1 set phase indication lamps with control fuses.					
	1 no. voltmeter with VSS.					
	1 no. ammeter with ASS and CTs.					
	300 A TPN Aluminium conductor bus bar dully sleeved.					
	OUTGOING					
	1 sets-125 A FP MCCB 15 KA outgoing with ON/OFF indiacting lamps and push buttons complete for electrical panel.					
	3 sets-63 A FP MCCB 15 KA outgoing with ON/OFF indiacting lamps and push buttons complete					
	4 sets-32 A FP MCCB 10 KA outgoing for with ON/OFF indiacting lamps and push buttons complete					
	Complete panel as above	1	No.			
32.2.2	AHU PANEL for basement					
	INCOMER					
	01 nos. 200 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.					
	1 set phase indication lamps with control fuses.					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 no. voltmeter with VSS. 1 no. ammeter with ASS and CTs. 250 A TPN Aluminium conductor bus bar dully sleeved.					
	OUTGOING					
	10 sets-63 A FP MCCB 25 KA outgoing with ON/OFF indiacting lamps and push buttons complete					
	1 sets-32 A FP MCCB 10 KA outgoing for with ON/OFF indiacting lamps and push buttons complete					
	2 sets-16 A FP MCCB 10 KA outgoing for with ON/OFF indiacting lamps and push buttons complete					
	Complete panel as above	6	Nos.			
32.2.3	PANEL AHP 2 (For terrace floor)					
	INCOMER					
	1 no. 63A, FP MCCB 15 KA with 1 set phase indication lamps with control fuses. 1 no. voltmeter with VSS. 1 no. ammeter with ASS and CTs. 125 A TPN Aluminium conductor bus bar dully sleeved.					
	OUTGOING					
	20 set-16A FP MCCB 10 KA outgoing with ON/OFF indiacting lamps and push buttons complete					
	Complete panel as above	1	No.			
32.3	AHU / FAN STARTER PANELS (AHSP)					

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of cubicle type totally enclosed wall/floor mounted free standing type, dust, damp and vermin proof for AHU made of 2mm thick CRCA sheet steel in compartmentalized design as per specification and drawings. These distribution boards shall be mounted on 50x50x6 MS angle frame work grouted to floor/walls of recessed. The rate includes the angle iron frame, support, painting, numbering, earthing etc. as required					
32.3.1	FAN STARTER PANEL (AHSP -					
	OUTGOING :					
	1 No. 63 Amps MCCB 10 KA for 10 HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for AHU motor as required.	32	Nos.			
32.3.2	FAN STARTER PANEL (AHSP -					
	OUTGOING :					
	1 No. 63 Amps MCCB 10 KA for 7.5 HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for AHU motor as required.	20	Nos.			
32.3.3	AHU STARTER PANEL					
	OUTGOING :					
	1 No. 32 Amps MCCB 10 KA for 5 HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for AHU motor as required.	5	Nos.			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
32.3.4	FAN STARTER PANEL					
	OUTGOING :					
	1 No. 16 Amps MCCB 10 KA for 2 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	10	Nos.			
32.2.5	FAN STARTER PANEL					
	OUTGOING :					
	1 No. 16 Amps MCCB 10 KA for 1/ 0.75 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	8	Nos.			
33.0	CABLING					
	Supplying, laying, effecting proper connections, testing & commissioning of following size of 1.1 kv PVC insulated aluminium conducting armoured cables as per IS 1554 Part-1 laid underground/cable tray/on surface of wall/hume pipe etc. & termination with brass compression glands as required.					
33.1	3.5C x 185 sq.mm cable	100	Mtr			
33.2	3.5C x 150 sq.mm cable	100	Mtr			
33.3	3.5C x 95 sq.mm cable	140	Mtr			
33.4	3.5C x 70 sq.mm cable	90	Mtr			
33.5	3.5C x 35 sq.mm cable	120	Mtr			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
33.6	3.5C x 25 sq.mm Cable	20	Mtr			
33.7	4 C X 16 sq. mm. Cable	20	Mtr			
33.8	4 C X10 sq. mm. Cable	25	Mtr			
33.9	4 C X 6 sq. mm. Cable	1400	Mtr			
33.10	3 C X 4 sq. mm. Cable	550	Mtr			
33.11	3C X 2.5 sq. mm. Cable	700	Mtr			
34.0	CABLE TRAYS					
	Supply & installation of following sizes of perforated MS cable trays including horizontal & vertical bends, reducers, tees, cross members and other accessories as required and duly supported from the ceiling/wall/floor with MS suspenders/supports and including painting etc. as required					
34.1	300 mm widthx50 mm deep x1.6 mmthickness	50	Mtr			
34.2	200 mm widthx50 mm deep x1.6 mmthickness	250	Mtr			
34.3	150 mm widthx50 mm deep x1.6 mmthickness	150	Mtr			
34.4	100 mm widthx50 mm deep x1.6 mmthickness	300	Mtr			
35.0	EARTHING					
35.1	Earth pits with GI earth plate of size 600mmx600mmx6mm thick including all accessories , down watering GI pipes 40mm dia and providing masonry enclosure with cover plate having interlocking arrangement and watering pipe etc. with charcoal (or coke and salt) complete as required	5	Set			

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
35.2	Providing & fixing GI earth strip 40mm x 6mm on surface or in recess for earth connections etc. as required	60	Mtr			
35.3	Providing and fixing GI earth strip on walls/ trenches complete as per specifications and as required.					
35.3.1	38mmx 6mm	75	Mtr			
35.3.2	25mm x 3mm	80	Mtr			
35.4	Providing and fixing earth wire of complete as per specifications as required.					
35.4.1	6 SWG wire	500	Mtr			
35.4.2	8 SWG wire	300	Mtr			
36.0	CONTROL CABLING					
	Supply, laying, effecting proper connections, testing & commissioning of 1.5 sq.mm. PVC insulated copper multicore cables from AHU's and AC equipments to central control console					
36.1	19 core cable	50				
36.2	14 core cable	80				
36.3	10 core cable	650				
36.4	8 core cable	100				
36.5	6 core cable	550				
36.6	5 core cable	550				
36.7	3 core cable	100				

Item No. 1	Description 2	Total Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
36.8	2 core cable	50				
37.0	CONTROL CONSOLE /DESK					
	Supplying, installation, testing & commissioning of floor mounted desk type control console cum indicating panel in the A.C. plant room containing various indications and controls for the complete air-conditioning system comprising chilling units, chilled/ Hot/ condenser water pumps, cooling towers and AHUs/ Ex. blower/ Fans etc , Hot water boiler with test push button facility. The panel shall be fabricated from minimum 1.6mm thick M.S. powder coated sheet of approved design. The air-conditioning module of the central control cum indicating panel shall contain the following accessories.					
	Status indication (ON, OFF & fault) of each compressor for each chilling machine, hot water boiler etc.					
	Push buttons and indicating lamps for remote start & stop and status indication for every nos of the water circulating pumps, Air Handling Units, Ex blower, Fans etc.					
	Push buttons and indication lamps for remote start & stop and status indication (On, Off & Fault) for every nos. cooling tower motors and low water level indication for every Nos. cooling towers.					
	Hooter and flashing lamp to indicate operation of any safety/ shut down with necessary contactors, accept, reset and test push buttons.					
	Complete wiring with copper conductor PVC insulated multicore 2.5 sq.mm stranded cable (including supply of cable, tray, clamps etc) from various equipments in the A.C. plant room, AHU's Terrace plant room and cooling towers etc to the control console panel as required.					
	COMPLETE PANEL AS ABOVE	1	Panel			
	Total For HVAC Works					

Construction of Academic block, Girls hostel, Auditorium, External services & Basement Parking” at RAK College of Nursing, Lajpat Nagar, New Delhi

SUMMARY
Rupees

1. Cost of Civil Works & Services.

CIVIL & RCC

PLUMBING

FIREFIGHTING

2. Cost of Electrical Works.

3. Cost of HVAC Works

Total Cost :-

(Signature of the Bidder)