SCHEDULE OF WORK

Name of Work- C/o Training Hostel/Facility including furniture and electrical work at CAFRI Campus Jhansi (U.P.)
(SH:- Electrical Works)

S.N.	Discription of Item	Qty.		Rate	Amount	(DSR25), MR Civil DSR 2023
	SH-I (Internal EI Work)					
1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable etc. as required.					
1.1	Group A	120	Point	1440.00	172800.00	1.3.1
2	Wiring for twin control light point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface / recessed steel conduit, 2 way modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS/HFFR PVC insulated copper conductor single core cable etc .as	44	Point	2242.00	98648.00	1.4
3	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable etc. as required.					
3.1	Group A	16	Point	914.00	14624.00	1.54.1
4	Wiring for light/ power plug with 2X4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit alongwith 1 No 4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable for loop earthing as required.	300	Mtr	480.00	144000.00	1.5
5	Wiring for light/ power plug with 4X4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit alongwith 2 Nos 4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable for loop earthing as	80	Mtr	724.00	57920.00	1.6
6	Supplying and fixing of following sizes of steel conduit along with 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.					
6.1	20 mm	80	Mtr	254.00	20320.00	1.20.1
6.2	25 mm	40	Mtr	289.00	11560.00	1.20.2
6.3	32 mm	20	Mtr	360.00	7200.00	1.20.3
7	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS/HFFR PVC insulated copper conductor, single core cable in surface/ recessed steel conduit as required					
7.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire.	80	Mtr	370.00	29600.00	1.7.1
7.2	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	80	Mtr	652.00	52160.00	1.7.4
8	Supplying and fixing following size/ modules, GI box along with modular base & cover plate for modular switches in recess etc as required.					
8.1	1 or 2 Module (75mmX75mm)	22	Each	354.00	7788.00	1.27.1

9	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required					
9.1	TV antenna socket outlet	9	Each	168.00	1512.00	1.24.7
10	Supplying, Installation, Testing and commissioning of CAT6 Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	18	Each	151.00	2718.00	39.14
11	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at –5°C ± 1°C and Pulling Force : 11.5Kg etc. complete as required.					
11.1	1 Run of cable	120	Mtr	60.00	7200.00	39.17.1
11.2	2 Run of cable	40	Mtr	96.00	3840.00	39.17.2
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	29	Each	545.00	15805.00	1.31
13	Supply & Fixing suitable size GI Box with modiular plate and cover in front on surface or in reccess including provising and fixing 6 pin 5/6 and 15/16 amps moduler socket outlet and 15/16 amps moduler switch connection ect. As reqd.	29	Each	659.00	19111.00	1.32
14	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providng and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	9	Each	757.00	6813.00	1.56
15	Supplying & fixing suitable size GI box wih modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	20	Each	807.00	16140.00	1.57
16	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	20	Each	47.00	940.00	1.26
	(Fans & Fittings)					
17	Supplying, Installation, testing & commissioning of 250 mm sweep, plastic ventilation Fan with louvers/shutters suitable for operation on single phase 220/230 volt, 50 Hz, AC supply on the existing opening complete i/c making connections with 3x1.5 sqmm FRLS PVC insulated copper conductor cable etc as reqd.	9	Each	2049.00	18441.00	MR

18	Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal(Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al bodyPower Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, suitable for operation with regulator for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req.					
18.1	1200mm, service value ≥ 6.0 CM/Min/Watt, air delivery 210 CM/Min (Minimum)	11	Each	2695.00	29645.00	9.2.3
19	Supplying, installation, testing and commissioning of wall-mounted fan of 400 mm sweep, 2200 RPM, single-phase, 230 V, 50 Hz AC supply, 120 W rated power consumption and air delivery of 120 CMM, with body made of polypropylene (PP), complete with inbuilt speed regulator, suitable wall mounting clamp/bracket, all necessary electrical connections, wiring accessories, hardware and other accessories required for proper installation and operation, including testing and commissioning, complete in all respects, as per relevant CPWD specifications, applicable IS standards and as directed by the Engineer-in-Charge. The fan shall carry a minimum two-year warranty from the date of commissioning	11	Each	4222.00	46442.00	MR
20	Supplying, installation, Testing & commissioning of LED Recessed / surface Down lighter (Round/ square/ Rectangular) SMD type of following body material with PMMA and prismatic diffuser and construction as per IS : 10322 with driver as per the requirement with Driver efficiency >85%, Operating voltage AC 140-270 Volt, frequency 50/60 hz, Operating temp range -5 deg to 40 deg centigrade, internal surge protection of 2.5 KV with Short & Open circuit protection ,THD < 10% , P. F.≥0.95, IP20, CRI >80 , UGR (Unified Glare Rating) < 19, Flicker free (flicker should be below 5%), life time (LED,Driver & electrical circuitary), of minimum 50000 Burning Hours with 70% of initial Lumen maintained till life ends , CCT 3000°K / 4000°K / 5700°K / 6500°K (As per ANSI Bin), SDCM (Standard Deviation Color Matching) <3, Maximum power consumption should not more than the pecified rating and Fixture shall be confirming to relevant BIS standards and trade mark certificate (T.C.). Manufactures Word Mark/Name Engraved/ Embossing/ Screen printing on housing Complete in all respect i/c external connections with 1.5 sq mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty.					

	System lumen efficacy ≥105 and <120 lm/Watt output . LM79 & LM80 Test report and all testing required for LED fixtures as per BIS shall be submitted.. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C) Powder coated die cast /Extruded aluminium Body including trim					
20.1	12 -15 watt	44	Each	715.00	31460.00	8.1.3
21	LED Panel light 2x2 ft. (System lumen efficacy ≥105 <120 lm/Watt) Supplying, installation, Testing & Commissioning of Panel light 2x2 ft., of following body material and construction as per IS: 10322 with driver as per the requirement with Driver efficiency >85%, Operating voltage AC 140-270 Volt, freq 50/60 hz, Operating temp range -5 deg to 40 deg centigrade, internal surge protection of 2.5 KV with Short & Open circuit protection, THD < 10% , P. F.≥0.95, IP20, CRI ≥80, UGR (Unified Glare Rating) < 19, Flicker free, (flicker should be below 5 %), life time (LED, Driver & electrical circuitry), of minimum 50000 Burning Hours with, 70% of initial Lumen maintained till life ends as per LM80 extrapolation IES TM-21-11 report, CCT 3000°K / 4000°K/ 5700°K /6500°K (As per ANSI Bin), SDCM (Standard Deviation Colour Matching) <3, Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard and trade mark certificate (T.C.). Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing. complete in all respect i/c external connections with 1.5 sq. mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy ≥105 <120 lm/Watt output. LM79 & LM80 Test report and all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C).					
	Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing. complete in all respect i/c external connections with 1.5 sq. mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy ≥105 <120 lm/Watt output. LM79 & LM80 Test report and all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C). Powder Coated CRCA Sheet Body (Thickness > 0.50 mm)					
21.1	40 watt	30	Each	2197.00	65910.00	8.6.11

22	Supplying, installation, Testing & commissioning of LED surface mounted Batten light of following body material and construction as per IS : 10322 with driver (Replaceable) as per the requirement with Driver efficiency >85% ,Operating voltage AC 140-270 Volt, freq 50/60 hz, Operating temp range -5 deg to 40 deg centigrade, internal surge protection of 2.5 KV with Short & Open circuit protection ,THD < 10% , P. F.≥0.95, IP20,CRI >80, Flicker free, (flicker should be below 5 %), life time (LED,Driver & electrical circuitary), of minimum 50000 Burning Hours with , 70% of initial Lumen maintained till life ends, CCT 3000°K / 4000°K / 5700°K /6500°K (As per ANSI Bin), SDCM(Standard Deviation Color Matching) <3, Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard and trade mark certificate (T.C.).					
	Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing. complete in all respect i/c external connections with 1.5 sq mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy ≥105 <120 lm/Watt output . LM79 & LM80 Test report and all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C). Powder Coated CRCA Sheet Body (Thickness > 0.50 mm)					
22.1	36 watt	20	Each	649.00	12980.00	8.9.7
23	Supplying, installation, testing & Commissioning of 10 watt surface mounted LED Bulk Head luminaire with IP66 protection, soft and glare symmetrical illumination fixing it on wall i/c connection with 3x1.5 sqmm FRLS PVC insulated copper conductor wire complete etc as required & as per terms & condition & technical specification attached	4	Each	1749.00	6996.00	MR
24	Supply and fixing Led tube rod comprising of LED tube with non integral /integral driver, upto 6500K color temp having 40000 burning hrs life with minimum @L70, system lumen output should be minimum with system efficacy>100lm/Watt.LEDdriverPF>0.95&THD<20%.The colour rendering index of LED light should be more than 70. Submission LM79-08/IS16106 (2012), IEC60598, IEC61347i/c connection wire, testing etc. to complete the job					
24.1	Tubelight LED 1X8 / 10 Watt Integral i/c batten aluminium body, PC diffuser (Mirror Light)	9	Each	560.00	5040.00	MR

25	SITC of wall mounted 3 watts LED adjustable goose neck bed side /study light having metal body housing luminiares efficacy ≥ 50 lm/watt , CCT >3000K having long life over 25000 burning hours at L80, with in electronic driver having PF>0.9, THD<15%, surge protection of 2.5KV suitable for 230 volt, 50Hz, AC supply complete i/c connection with 3x1.5 sq.mm. PVC insulated FRLS copper conductor single core cable etc. complete as required.	18	Each	1658.00	29844.00	MR
26	SITC of prewired Decorative wall light fixture made up of metal (single headed) , with 9 W retrofit LED Lamp directly on wall i/c making connection with 3x1.5 sqmm FRLS PVC insulated copper conductor wire etc. as reqd.	20	Each	1438.00	28760.00	MR
	APPLIANCES					
27	Supplying, Installation, Testing and Commissioning of Single door type frost free Refrigerator of capacity range from 90-95 ltrs. with compressor and eco-friendly refrigerant, complete with all standard accessories, suitable for operation on 230V, 50Hz, Single Phase AC etc as required.	9	Each	12762.00	114858.00	MR
28	Supplying & fixing of digital wall clock displaying Date, Time , Day & temperature simultaneously with minimu size of 400 sq.cm with required number of batterries complete etc. as required	9	Each	3519.00	31671.00	MR
29	Supplying, Testing & Commissioning of stainless steel Electric Kettle minimum capacity of 1300 watt & 1.5 Ltrs. Capacity having cool touch handle and lid with automatic cutoff feature when water has boiled minimum with standard power cord and plug top etc, as required.	9	Each	962.00	8658.00	MR
30	Supply, Installation, Testing and Commissioning of 32" HD smart LED display with minimum 1366*768 resolution with HDMI 2.0 X 2, AV X 1, USB 2.0 X 1 & WI-fi enable , with minimum 10 watt audio output speaker including connection etc complete as required.	9	Each	20611.00	185499.00	MR
31	Supply, Installation, Testing and Commissioning of oil filled room heater with 9 fins with thermostat, Power consuption 2000 W and ISI approved PTC fan heater, inbuild tip oversafety switch including 2 year warranty etc complete as required.	9	Each	12680.00	114120.00	MR
	(RO SYSTEM)					
32	Supplying ,installation ,testing & commissioning of Commercial RO Water Purifier having multiple purification process of RO+UV to remove all dissolved impurities, bacteria and viruses while retaining essential natural minerals in water. RO having ABS/MS powder coating for corrosion free life span. RO having membranes and a high-pressure pump for purification that facilitates a flow rate of up to 50L/hr and minimum 40 % water recovery.The RO should work upto 1500mg/ Ltr TDS.	1	Each	59690.00	59690.00	MR

33	Supplying ,installation ,testing & commissioning of storage type water coolers ISI certified With SS body and food grade SS tank with thermostat control for water cooling with faster cooling technology having 60L/Hr cooling capacity and 120 Ltrs storage capacity having 2 Nos. cold Faucets including connection for water and electricity supply etc as required.	1	Each	61429.00	61429.00	MR
	(Distribution Boards)					
34	Supplying and fixing of following ways surface/ recess mounting, vertical type, 415 V, TPN MCB distribution board of sheet steel, dust protected, duly powder painted, inclusive of 200 A tinned copper bus bar, common neutral link, earth bar, din bar for mounting MCBs (but without MCBs and incomer) as required. (Note : Vertical type MCB TPDB is normally used where 3 phase outlets are required.) **(Note : DB should be suitable for MCCB as**					
34.1	8 way (4 + 24), Double door	1	Each	10724.00	10724.00	2.5.2
35	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, Ics=100% Icu and Operational Voltage 690V etc. as required.					
35.1	100 A,30KA,FPMCCB (I/c of power VTPN DB)	1	Each	8127.00	8127.00	2.2.13
36	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)					
36.1	8 way , Double door	10	Each	2773.00	27730.00	2.3.2
37	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.					
37.1	Single pole	70	Each	285.00	19950.00	2.10.1
37.2	Double pole	10	Each	696.00	6960.00	2.10.3
38	Supplying and fixing Cable End Box (Loose Wire Box) suitable for following single pole and neutral, sheet steel, MCB distribution board, 240 Volts, on surface/ recess, complete with testing and commissioning etc. as required					
38.1	For 8 way, Double door SPN MCBDB	10	Each	918.00	9180.00	2.23.2
39	Supplying and fixing Cable End Box (Loose Wire Box) suitable for following triple pole and neutral, sheet steel, MCB distribution board, 415 Volts, on surface/ recess, complete with testing and commissioning etc.as required.					
39.1	For 8 way, Double door TPN MCBDB	1	Each	1448.00	1448.00	2.24.3
	(Service Connection)					
40	Supplying and laying of one number XLPE insulated and PVC sheathed ,armoured ,aluminium conductor power cable 1.1 KV grade of following size in the existing RCC/ HUME/ STONEWARE/ METAL/ DWC pipe as required.(ISI marked)					
40.1	3.5 x 240 sqmm	250	Mtr	4267.00	1066750.00	MR
40.2	3.5 x 50 sqmm	20	Mtr	1076.00	21520.00	MR

41	Supplying and laying of one number XLPE insulated & PVC sheathed, armoured aluminium conductor cable of 1.1 KV grade of following size in open duct/loop as reqd.					
41.1	3.5x240 sqmm	40	Mtr	4245.00	169800.00	MR
41.2	3.5 x 50 sqmm	10	Mtr	1063.00	10630.00	MR
42	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.					
42.1	3½ X 240 sq. mm (62mm)	2	Each	1160.00	2320.00	11.1.29
43	Providing, laying and fixing following dia G.I. pipe (medium class) in ground complete with G.I. fittings including trenching (75 cm deep)and re-filling etc as required (Civil DSR 2023 Rate add for 0.973)					
43.1	80 mm dia	18	Mtr	1014.00	18252.00	18.12.8 (civil)
44	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc.direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.					
44.1	63 mm dia (OD-63 mm & ID-51 mm nominal)	20	Mtr	289.00	5780.00	15.16.1
44.2	120 mm dia (OD-90 mm & ID-76 mm Nominal)	250	Mtr	417.00	104250.00	15.16.3
45	Supplying, Installation, Testing and Commissioning of making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) of size 60 cm X 60 cm at the bottom and 50 cm X 50 cm at the top with a thickness of 1°Cm including inscription duly engraved as required.	40	Each	683.00	27320.00	10.9
	(Panels)					
46	Fabricating, supplying, installtion testing & commissioning of cubical outdoor type feeder pillar, free standing totally enclosed, both side front and back openable dust and vermin proof compartmentalised having IP 66 protection suitable for 415 V 3 Phase, 50 Hz AC supply having hinged gasketted and lockable double door fabricated from 2 mm thick CRCA sheet for whole body & 3mm thick gland plate, 450 mm deep, entire panel shall have aluminium earth strip in full width of panel of size 25mmx5mm at the rear with 2 No. earth stud mounted on 50mm x 50mm x 6mm angle iron framed base & leg with height of 75 cm height (30 cm below ground & 45 cm above ground) having suitable tag bolt on the top complete with connection, interconnection with solid aluminium bar/strip of suitable capacity according to MCCB i/c, painting, earthing the body i/c Providing and fixing of following accessories in it. (Front Area should not be less than 2.08 Sq Mtr of Each feeder pillar)					
A	**Incoming**					
a	160 Amp, 25 KA, FP MCCB with thermal magnetic release, spreader link & extended rotary handle (Ics=100% Icu) - 1No.					

b	Alu. bus bar chamber with bus bar of rating 300 Amp, TPN at 415 V, duly PVC sleeved & insulation base - 1 Set.					
c	Multifuncation meter LCD type having parameter measured are V, I, Hz, PF, kW, kWh accurancy class 5P10 , Burden 15VA - 1 Set.					
d	300/5 Amp. ratio CTs accurancy class 5P10 , Burden 15VA with MCB Set=1 Set					
e	LED type Phase Indicating lamp 3 Nos with protection MCB 2 Amp. -1 Set					
f	Danger notice plate -1 No.					
B	**Outgoing**					
a	125 Amp, 25 KA, FP MCCB with thermal magnetic release, spreader link & extended rotary handle (Ics=100% Icu) - 1 No.					
b	100 Amp 4 pole 25 KA series FP MCCB with thermal magnetic release, spreader link & extended rotary handle (Ics=100% Icu) -2 No.					
c	63 Amp 4 pole 25 KA series FP MCCB with thermal magnetic release, spreader link & extended rotary handle (Ics=100% Icu) -1 No.	1	Job	177644.00	177644.00	MR
	(Earthing)					
47	Earthing with G.I. earth pipe 4.5 metre long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/ coke and salt as	4	Each	7658.00	30632.00	5.2
48	Providing and fixing 25mmx5mm GI strip in 40mm dia GI pipe from earth electrode including connections with GI nut, bolt, spring , washer, excavation and refilling etc as required	20	Mtr	755	15100.00	5.11
49	Providing & Fixing 25mmx5mm GI strip on surface or in reccess for connections etc. as required.	50	Mtr	287.00	14350.00	5.15
50	Providing and fixing 6 SWG dia GI Wire on surface or in reccess for loop earthing alongwith existing surface/ reccess conduit / sub main wiring / cable as reqired.	1000	Mtr	50.00	50000.00	5.18
	(Lighting Conductor)					
51	Providing and fixing of lightning conductor finial, made of 25 mm dia 300 mm long, G.I. tube, having single prong at top, with 85 mm dia 6 mm thick G.I. base plate including holes etc. complete as required.	1	Each	609.00	609.00	6.1
52	Jointing copper / G.I. tape (with another copper/ G I tape, base of the finial or any other metallic object) by riveting / nut bolting/ sweating and soldering etc as required.	10	Each	139.00	1390.00	6.3
53	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or on surface of wall for lightning conductor complete as required.(For horizontal run)	60	Mtr	148.00	8880.00	6.6
54	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or on surface of wall for lightning conductor complete as required. (For vertical run)	20	Mtr	238.00	4760.00	6.7
55	Providing and fixing testing joint, made of 20 mm X 3 mm thick G.I. strip, 125 mm long, with 4 Nos. of G.I. bolts, nuts, chuck nuts and spring washers etc. complete as required.	2	Each	140.00	280.00	6.10

56	Providing and laying G.I. tape 32 mm X 6 mm from earth electrode directly in ground as required.	15	Mtr.	221.00	3315.00	6.11
	(Air Conditioning & Gyser)					
57	Supply , Installation, Testing and Comissioning of Air Cooled Hi Wall split type Air conditioners complete with Indoor unit(IDU),Out door unit (ODU), surface / concealed copper Refrigerant piping with insulation (closed cell elastomeric nitrile rubber tubular pipe section) upto 3 Mtr (IDU to ODU), copper power cable upto 3.5 Mtr (IDU to ODU) i/c drain pipe R-32/R-410/ R- 407 Green Refrigerant, wireless Remote control, suitable for working between 180-260V with low & high voltage cutoff and 50 hz ,1 phase AC supply capable of performing cooling, dehumidification, air circulation of following capacity with Scroll / rotary compressor. The system shall be able to deliver 100% of the rated capacity upto 42 Degree Celcius. Min 5 year Original Equipment Manufacturer (OEM) warranty both compressor and Printed Circuit Board (PCB). Must comply : Electrical cable IS694 or IS 9968 temperature sensing control IS /International Electrotechnical Commission (IEC) 60730, hermetic compressor IS 10617, heat exchanger IS 11329, capacitor IS 2993 and motor IS 12615. Complete as per CPWD specification and IS : 1391 Part II 2023. The system shall be able to operate up to 50 0C (out door ambient temperature).					
57.1	2.0 TR with 5 Star BEE Rating	9	Each	57396.00	516564.00	32.2.4
58	Supplying, installation, testing and commissioning of following capacity Vertical Storage type Electric Water Heater with ABS outer body and SS tank, 5 Star rating as per BEE standard, external adjustable controller to withstand working pressure up to 8Kg/cm2 & Multi-Functional Safety Valve.)					
58.1	25 Litres	9	Each	10960.00	98640.00	MR
	(Fire Extinguisher)					
59	Providing and fixing 6.0 kg capacity ISI marked ABC stored pressure powder (monoammonium phosphate 70%) Fire Extinguisher IS : 15683 latest revision manufacturer and of CRCA sheet in welded construction, finish with epoxy polyster powder coated complete with brass forged ball valve, gun metal cap and nozzel, including initial filled and wall suspension bracket (suitable for fighting in class 'A', B & 'C' that is wood,textile, flammable liquid, electric and gases. (All with ISI marked.)	4	Each	2812.00	11248	**MR**
60	Providing and fixing 4.5 kg capacity ISI-marked CO_2 type fire extinguisher, complete with CO_2 gas charge, valve, discharge hose with horn nozzle, safety device and wall-mounting bracket, conforming to relevant IS standards, complete in all respects	4	Each	8055.00	32220	**MR**
	STREET LIGHT					

61	Supplying, installation, testing and commissioning of 5 meter High Octagonal Poles, Hot Dip Galvanised in single dip as per BS EN ISO 1461/BS EN 10025 of thickness 3 mm dia 70-75mm & 130-135 mm for top and bottom respectively. The pole should be complete with MS base plate of size 200mmX200mmX12mm, with 4 no. holes for bolts as per manufacturer catalogue and design , manufacture should be Embossed on the body of the pole near flush door) complete with foundation, plaster, Painting and grouting nut bolt etc. Pole should be finished with weather proof flush door with locking facility preferably with allen key at minimum hight of 500mm having proper arrangement for supplying and fixing of 1 No. 5 Amp., 10KA 'C' series DP MCB in din channel, 4 Pole heavy duty connector, mounted on hylem / mica sheet of thickness not less then 6 mm. i/c wiring from MCB to fitting with 3x1.5 sq.mm FRLS PVC insulated copper conductor unarmoured cable, earth connection, and other accessories pertaining to this pole					
	(But with out street light fitting) etc as reqd. including providing & laying in position suitable RCC foundation with 1:2:4 (1 cement: 2 Coarse sand : 4 graded stone aggregate of 20mm dia nominal size) including excavation of all kind of earth such as all type of soil/soft rock or hard rock etc. as per existing site condition i/c providing, cutting, bending and placing reinforcement & J type foundation bolts, anchor plate and templates in position as per manufacturer standard, DWC HDPE Pipe of suitable dia. for cable entry, including disposal of surplus malba/ softrock/hardrock stone etc.complete as required.	6	Each	16878.00	101268.00	MR
61.1	Supplying & Installation of One mtr GI Street Light pole Arm for support LED Light ets as required	6	Each	2357.00	14142.00	MR

62	LED Street light fixture, powder coated pressure die cast aluminium body (System lumen efficacy ≥105 <120 lm/Watt) Supplying, installation, Testing & Commissioning of Street light LED fixture powder coated pressure die cast aluminium body with driver as per the requirement with Driver efficiency >85%, Input voltage: 140-270 Volt AC, frequency 50/60 hz, Operating temp range -5 0C to 50 0C, internal surge protection of 5 KV L,N,E as per IEC 61000-4-5, Driver efficiency >85%,THD < 10% as per IEC 61000-3-2, P. F.≥0.95, IP-66,IK-10, CRI >70, under voltage and over voltage protection, EMIEMC As per CISPR -15, lenses for beam angle as per IESNA type I/II/III as per the width of the roadand the project requirement., suitable to fit in up to 65mm dia pipe, life time (LED, Driver & electrical circuitry) of minimum 50000 Burning Hours with 70% of initial Lumen maintained till life ends as per LM80 extrapolation IES TM-21-11 report, CCT 3000°K / 4000°K / 5700°K /6500°K (As per ANSI Bin),SDCM (Standard Deviation Colour Matching) <5, Maximum power nsumption should not more than the specified rating and Fixture shall be of relevant BIS standard complete in all respect i/c external connections with 1.5 sq.mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty.					
	System lumen efficacy ≥105 <120 lm/Watt output .LM79 & LM80 Test report and all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by ngineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C).					
62.1	72 watt	30	Each	1920.00	57600.00	8.12.13
63	Supplying & Laying of one number PVC insulated and PVC sheathed / XLPE aluminium conductor power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.					
63.1	3.5 X 50 Sq mm	50	Mtr	1076.00	53800.00	MR
63.2	3.5 X 35 Sq mm	50	Mtr	800.00	40000.00	MR
63.3	3 X 10 Sq mm	300	Mtr	417.00	125100.00	MR
64	Supplying and laying of one number XLPE insulated & PVC sheathed, armoured aluminium conductor cable of 1.1 KV grade of following size in open duct/loop as reqd.					
64.1	3.5 X 50 Sq mm	10	Mtr	1063.00	10630.00	MR
64.2	3.5 X 35 Sq mm	10	Mtr	791.00	7910.00	MR
64.3	3 X 10 Sq mm	50	Mtr	407.00	20350.00	MR
65	Supplying & Laying of one number PVC insulated and PVC sheathed / XLPE aluminium conductor power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.					
65.1	3½ X 50 sq. mm (35mm)	4	Each	484.00	1936.00	11.1.22
65.2	3½ X 35 sq. mm (32mm)	4	Each	437.00	1748.00	11.1.21
65.3	3 X 10 sq. mm (22mm)	10	Each	312.00	3120.00	11.1.7

66	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc.direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.					
66.1	a) 63 mm dia (OD-63 mm & ID-51 mm nominal)	300	Mtr	289.00	86700.00	15.16.1
67	Supplying, installation, testing and commissioning of cubical type LT feeder pillar of suitable size & suitable for operation on 415 Volts, 3 phase 4 wire 50 Hz AC supply system, fabricated in compartmentalized & segregated design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland plates i/c powder coating in approved shade having 200 amp. TPN aluminium alloy bus bars of high conductivity with supports of DMC/SMC insulator, MS angle iron frame work base of 50x50x5 mm i/c legs of 50 cm below ground & 25 cm above ground with CC foundation , entire panel shall have a common aluminium earth bar of size 25x5mm at the rear with 2 No. earth stud, solid connection from main bus bar to switch gears with required size of aluminium bus bars and control wiring with 2.5 Sq mm PVC insulated copper conductor FRLS wire i/c providing and fixing following switch gears complete etc as reqd.					
	INCOMMING					
	i) 100 Amp, FP MCCB 25 KA MCCB (ICS=100%ICU) with thermal magnetic release with spreader link -1 No.					
	LED light R,Y,B					
	OUTGOING					
	i) 150 Amp TPN Aluminium bus bar set-1 Set					
	ii) 63 Amp, DP MCB 10 KA MCB with -6 No. Make					
	iii)2 output per phase and suitable for single phase supply (Astronomical Time switch)-3 Nos					
	iv) Danger Notice Plate 200 mm x 100 mm size-1 No.	1	Job	66371.00	66371.00	MR
	Total of SH- I				**4609190.00**	
	SH- II (Solar Photovoltaic Power Plant)					
1	Supply, Installation, Testing and Commissioning of on-grid Solar Photovoltaic Power Plant conforming to various applicable standards BIS, IEC, MNRE guidelines, the Central Electricity Authority Regulations and CPWD Specifications as amended up to date, consisting of Mono/Poly Crystalline silicon solar cells module, net metering facility, necessary control, protections, earthing, cabling, mounting structure, junction boxes, power conditioning units, Real time online web interfaced Data Monitoring System, Distribution panels, grid connecting arrangement, conduits, pipes, cable trays and other accessories etc. as required.					

	a) High Energy Efficiency Solar Photovoltaic Module of capacity 330 Wp or above, manufactured in India, conforming to IS 14286/IEC 61215, IS/IEC 61730-Part-1, IS/IEC 61730-Part-2. Solar Photovoltaic Module conversion efficiency shall not be less than 23% at STC with temperature coefficient of Pmax better than -0.30% per degree Celsius. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Solar Modules shall be designed to operate in relative humidity upto 100% with temperature between -10 Deg C and +85 Deg C. Further, each PV module used in any solar power project must have Radio frequency identification tag with information such as name of manufacturer, month and year of manufacturing, country of origin (separately for Solar cell and module), I-V curve, Unique Serial No and Model No of the module, Wattage, Im, Vm and FF, name of test lab issuing IEC certificate.					
	b)Power Conditioning Unit (PCU) of 350-800 V DC Input voltage range and 415 V AC, three phase, 4 wire, 50Hz +/- 2.5 Hz, output voltage suitable to generate AC with a variation of 10% at nominal voltage. Power with efficiency not less than 97%, total harmonic distortion less than 3% and suitable for ambient temperature from 0 to 50 degree C , Minimum IP-65 for outdoorand Minimum IP 21 for indoor, Built-in meter and data logger, MPPT, switching devices IGBT/MOSFETs and controller Microprocessor /DSP . PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown. The PCU shall be able to withstand unbalanced load conforming to IEC standard with shutdown/standby mode.It must be provided with grid islanding along with manual disconnect pole isolation switch besides automatic disconnection. Minimum protections: Mains Under /Over Voltage, Over current, Over/Under grid frequency, Over temperature, Surge voltage induced at output due to external source, Shortcircuit, Lightening, Anti Islanding (for grid synch. Mode) and other protections as per applicable standards. LCD/LED display of minimum parameters: DC input voltage, DC current, AC Voltage and current (all 3 phases, in case of 3 phase), Instantaneous & cumulative AC output power, Daily DC energy produced and other parameters applicable standard. Communication interface RS 485 / RS 232.					

	c) Module mounting structure: The roof top solar plant generation units shall be installed by using supporting Aluminium/Galvanized MS structure (mass of zinc coating shall be as per IS4759) having minimum head room clearance of 2.4 meter above the terrace level / ground level. The mounting structure would be designed to sustain wind load and seismic parameter of the site of installation. All the structure shall be design as per applicable BIS code and the material shall also confirm the applicable BIS Code. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. The suitable arrangements for maintenance and cleaning shall be provided.					
	d) Real time online web interfaced Data Monitoring System complete with accessories for various parameters such as Solar Irradiance, temperature, AC Output Voltage and current, Output Power, Power factor, DC Input Voltage and Current, Time Active, Time disabled, Time Idle, Power produced and other parameters as per standard practices.					
	e) Array junction box & Main junction box with IP 65 protection and termination arrangement for incoming and outgoing cable along with glands, lugs and other accessories etc. as required. Each junction box shall be made of GRP/FRP/Powder Coated Aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement with High quality Suitable capacity Metal Oxide Varistors(MOVs) (semiconductor diode with resistant applied voltage)/ surge arrestors and suitable Reverse Blocking Diodes, isolation switches isolate the DC input to Inverter, copper bus bar etc.					
	f) Lightning ,surge voltage protection, earthing protection and grid islanding.					
	g) Cables: Connections & Interconnections by required size IR/UV protected XLPE insulated copper conductor 1.1 kV grade armored power and control cables(ISI Marked) along with supplying & fixing of necessary channel/conduit, GI cable trays , supports, lugs, thimble and other accessories etc. as required. h) DC Distribution Board And AC Distribution Panel Board: IP65, free standing, metal cladded, having copper bus bar, having required protection and control gears, connectioninterconnection, etc. as required.	25	KWP	54280.00	1357000.00	17.1
	Total of SH-II				**1357000.00**	
	SH- III (DG SET)					

1	Providing, Installing, Testing, and Commissioning of `Silent Type` Diesel Generating set along with having Prime Power Rating of 30 KVA, 415 volts at 1500 RPM, 0.8 lagging power factor at 415 V suitable for 50 Hz, 3 phase system confirming to BS 5514/ IS 10002, ISO 3046 and consisting of the followings **with inbuilt AMF panel.**					
	A-Disel Engine					
	Diesel engine 4 stroke water cooled, electric start, of suitable BHP at 1500 RPM suitable for output of alternator at NTP conditions, 50% RH & at 1000 Meter Mean sea level and conforming to BS 5514/ IS 10002, capable of taking 10% over loading for one hour after 12 hours of continuous operation. The engine will be fitted complete with all the required accessories & turbo charger.					
	B. Control Panel 14/16 gauge CRCA sheet fitted with suitable capacity MCCB & alphaneumeric display other accessories complete with indicators to indicate necessary parameters as per standard design of the manufacturer/OEM .					
	C. Alternator					
	Synchronous alternator rated at 30 KVA, 415 volts at 1500 RPM, 3 Phase 50 Hz, AC supply with 0.8 lagging power factor at 40 Degree C, 50% RH & at 1000 Meter Mean sea level. The alternator shall be having SPDP enclosure, brushless, continuous duty. Self-excited and self-regulated through AVR conforming to IS: 4722/BS 2613 suitable for tropical conditions and with class F/H insulation.					
	D. Fuel tank					
	Inbuilt fuel tank of suitable capacity fabricated out of MS sheet complete with all standard accessories and fuel piping as per manufacturer/OEM standard & design .					
	E. Exhaust system					
	Dry exhaust mainfold with residental exaust silencer as per manufacturer /OEM standard & design.					
	F. Starting system					
	12 V DC starting system comprising of starter motors: voltage regulator and arrangement for initial excitation complete with suitable nos. & capacity of batteries as per manufacturer/OEM standard design. Noise level is 75 dB(A) at distance of 1 mtrs. in open free field environment as per ISO 8528 part 10					
	G. Acoustic and weather proof enclosure with arrangement for fresh air intake for cooling of the engine & alternator, extraction, discharging hot air in to the atmosphere i/c necessary accessories as per manufacturer /OEM standard design .					
	H. Following shut down & protection system shall be integrated for engine.					

	(I) Low lubricating oil pressure shut down.This shall be inoperative during start up and acceleration period.					
	(II) High coolant (water) temperature shut down. (III) Engine over speed shut down.					
1.1	30 KVA	1	Each	422786.00	422786.00	MR
	Total of SH-III				**422786.00**	
	SH - IV (CCTV CAMERA)					
1	Supplying Installation Testing and Commissioning of 2 MP IP IR Dome Camera having following mspecifications, type of lens and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: >50 dB, Camera should display Camera title, Date & Time in live & recorded video 2)Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition(Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, ntegrated IR Source (Auto, Manual)-Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking. 3) Compression (Minimum):-Video:- H.265 or better, H.264H, H.264, Audio:-G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120db or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920 ×1080)@25/30 fps,Sub streams minimum: 720P@25/30 fps).					
	7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection 8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot. 9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB emory Card.					

	10) Recording Management: Format SD, overwrite, storage management, video to NAS device 11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12)Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast 13) System Capability: ONVIF, Camera shall support open source VMS 14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement.					
	16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS					
1.1	2MP (@ 25/30fps@1080P (1920×1080)) IP IR Dome Camera with 2.8/ 3.6mm fixed lens	6	Each	8048.00	48288.00	40.1.1
2	Supplying Installation Testing and Commissioning of following Channel Network Video Recorder (NVR) with camera licenses to record for all channels having spcifications and features etc as mentioned below :					
	1) Network Video Recorder Embedded/ Installed OS (Linux) along with Camera Licenses for number of channels of NVR to record per NVR and to provide a live view, storage and simultaneously Multi-channel playback of all IP, IR camera or more and must be ONVIF with minimum support of 256Mbps incoming Bandwidth.					
	2) NVR should support H.265 or better, H.264, MJPEG, MPEG4 support					
	3) Must support 1 channel Input, 1 channel Output, RCA for Two-way Talk					
	4) Intelligent auto power on when power resumes after power outage.					
	5) Storage: It should support minimum 2 SATA Slots with 20TB capacity/ Slot.					
	6) Connectivity Interface : 1 Nos. x 10/100/1000 Mbps Ethernet Ports, 1x RS485, 1x RS232					
	7) Backup Interface : Its should have 2 Nosx USB port (1x USB3.0, 1xUSB2.0)					
	8) Video Output Ports: 1x HDMI and 1 VGA					
	9) Alarm Ports: It should have 4/1 Ch In/ Out ports to connect various type of external sensors and output devices like hooter/ Siren etc.					

	10) Email & SMS Altert options: Option for SMS/ Email Alerts to minimum 5 designated mobile number for power failure, HDD failure, vandalism, tempring, network disconnection and panic					
	11) Web & Mobile Application: Web, Mobile app (For iPhone, iPad, Android Phone) for alerts and viewing.					
	12) Protocols: HTTP, HTTPS, TCP/IP, IPv4, UDP, NTP, DHCP, DNS, SMTP, UPnP, DDNS, Alarm Server, IP Search, Multicast, Auto Registration, ONVIF (Profile T, Profile S, Profile G), CGI, SDK and OEM Cloud for remote monitoring without any public IP need.					
	13) Standards: CE, FCC, RoHS and BIS Certified					
	14) Power Supply : Should support 12VDC, 4Amp or AC100-240V, 50/60Hz Power supply.					
	15) Operating Condition : Ambient Temperature (-5°C to 50°C), humidity 90% (max) (non-condensing)					
	16) The VMS, NVR application shall support all the features & functionalities of the offered cameras.					
	17) VMS should consist of Base license and Channel Licenses. VMS should be provided with camera Licenses , with no dependency of VMS licenses by binding with the MAC address of the cameras to achieve the functionality.					
	18) The NVR OEM shall be responsible for providing a mobile application compatible with both Android and iOS devices, enabling remote monitoring and playback of cameras/NVR footage.					
	19) The OEM must provide its own DDNS server hosted in India, eliminating the need for a public IP address for remote monitoring over the Internet.					
	20) Must support Resolution: 7680x4320 (8K), 3840*2160, 1920×1080, 1280×1024,1280×720, 1024×768					
	21) Must support recording resolution upto 32MP					
	22) Must support Continuous, Alarm, Motion, Instant, Panic Recording Mode					
	23) When alarm recording is enabled and an event occurs, you can click the alarm icon on monitoring page to view the alert details. The snapshot function is supported on monitoring and playback page					
	24) The Network Video Recorder (NVR) shall be configured to send email whenever a system message is created or an alarm event occurs. The email server shall be a valid SMTP server. Each recipient email address shall be configured to receive any combination of critical, warning, or informational messages or alarm notifications. When an alarm occurs, the email message includes the NVR name, time of alarm and a list of camera that is configured to record upon alarm					
	25) It should support Network Support: HTTP, TCP/IP, SMTP, DHCP, DNS, DDNS, FTP, NTP, UPnP, Multi IP Setting. Convert multiple recording files to one avi/MP4 file.					

	26) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Excep┐tion Detection, People Staying Detection, Violence Detection.					
	27) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan					
	28) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email.					
	29) Built-In Artificial Intelligence: NVR should have built-in AI :- - 2 Channel face detection and recognition, - Minimum 4 Channel perimeter protection, - Minimum 8 Channel Smart Motion Detection					
	30) Face Recognition Database Capacity: It should support total Blacklist and Whitelist capacity of Minimum 20,000 Faces or more with Face Detection speed of 12 face images/sec.					
	31) Face & Human Attributes Search: Search Pictures/ Video by Gender, age group, glasses, expressions, face mask, beard, Top color, top type, hat, bag, age, gender and umbrella.					
	32) ANPR Capability: It should support ANPR Camera with License plate, plate color, vehicle body, vehicle model, vehicle logo, calling, seatbelt, vehicle registration location etc vehicle attributes.					
	33) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan, cybersecurity exception					
	34) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email.					
	35) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Excep┐tion Detection, People Staying Detection, Violence Detection.					
	36) Smart playback function: Should support smart search for the selected area in the video and smart playback to improve the playback efficiency					
	37) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics					
2.1	08 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9, 2nd screen: 1/4/8/9	1	Each	10078.00	10078.00	40.10.1

3	Supplying, Installation, Testing and Commissioning following capacity Serveillance grade Hard Disk with upto 256MB/s Transfer Rate, 256 MB Cache, 7200 RPM Disk Speed, 3.5 inch form factor, SATA Interface, BSMI, ICES-003/NNB-003, CE, FCC, KC, Maghreb, RCM, UKCA, VCCI, CB-Scheme, TUV, UL Certifications.					
3.1	4TB (Terabytes)	1	Each	13943.00	13943.00	40.12.1
4	Supplying, Installation, Testing and commissioning of indoor Wireless Access Point for Low Density use having features and specifications etc. as mentioned here under - Dual-band Wi-Fi6 (802.11ax) 574Mbps (2.4GHz) + 1200Mbps (5GHz), WI-FI 6 Certified, 1 x RJ45 console port, 1G LAN POE Port, factory reset, WPA/WPA2/WPA3™ Personal/Enterprise, WEP 64/128-bit, SSID broadcast disable, MAC address access control, Internal RADIUS server, SNMP, Customizable Captive Portal, Auto Channel, Works as Access Point, WDS, WDS with AP, Wireless Client, Web (HTTP), Secure Socket Layer (SSL), Traffic control, Support ATF/Fast Roaming/Band Steering, Supports enhanced security – WPA-PSK/WPA2-PSK/WPA3-PSK and RADIUS client, and Cipher negotiation, and MAC/ IP ACL for networks, Certifications: MTCTE, CE, FCC. Should also work as Standalone and must be Compatible with S/W & H/W Controller with addtional features like - Real-Time Monitoring and Alerts, Rich Advanced Features, Centralized Device Management, Role-Based Administration, Real-Time Monitoring, VLAN and Access Control, Auto RF Management and Bandwidth Optimization, Multi-SSID and Captive Portal Authentication.OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.	2	Each	22739.00	45478.00	39.7

5	Supplying, installation, Testing and commissioning of following capacity 8 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: Minimum 8 X RJ-45 Gigabit Ethernet Ports and additional 2 X 1G SFP Ports with non-blocking architecture by having Switching capacity of minimum 20Gbps and packet forwarding rate of 14Mpps or higher, 8K MAC table. Internal dual AC Power supply with operating temperature of -5 0C to +50 0C. Jumbo frame: 10KB or higher, IGMP Snooping, IGMP snooping querier and support for IGMP Snooping Fast Leave, Should create 250 or more MLD groups, MLD Snooping, Per VLAN MLD Snooping C MLD Snooping Fast Leave, STP, RSTP, MSTP, Loopback detection, Multicast filtering, VLAN Tagging, QOS: 8 Que per port, WRR, IPv4/IPv6 Interface : minimum 100 IPv4 static route entries and minimum 50 IPv6 static route entries, 700 Acess Control entries, SSH CSSL for IPv4 and IPv6, 802.1x, ARP Spoofing, DHCP Snooping and server screening, IP+MAC+Port Binding, Per Port Bandwidth Control, 802.1X Authentication (Supports local/RADIUS database, Port-based Access Control and EAP, OTP, TLS, TTLS, PEAP Support) Cable Diagnostic feature, LLDP, LLDP-MED, SNTP/NTP, RMON, SNMP v1,v2c, v3 and SNMP Traps. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.					
5.1	8 port PoE Layer 2 Network Switch with PoE Support of 130W or higher with each copper port supporting 802.3at PoE+.	1	Each	35091.00	35091.00	39.1.1
6	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color- RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required.					
	9U Rack	1	Each	8960.00	8960.00	39.23.2
7	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D					
7.1	Copper Patch Cords of length 1m (3ft)	18	Each	151.00	2718.00	39.12.1

8	Supplying, Installation, Testing and Commissioning of following size LED display (LED monitor) industrial grade with 3840x2160 resolution or better, USB playback, bluetooth and miracast connectivity, 4X HDMI 2.0, DP 1.2, HDR 10/10+, brightness: 500-nits or better, Video wall mode should be available, contrast ratio: 1200:1, OPS slot, viewing angle (H/V): 170°/ 170°, response time less than 12ms, Display control shall be on monitor screen and programmable with remote (remote shall be supplied with system), Key Board, Optical Mouse, etc. as required.					
8.1	32 inch or larger	1	Each	39590.00	39590.00	42.4.1
9	Online UPS - Input supply: Single Phase, Output Supply: Single Phase.					
	Supplying, installation, Testing & Commissioning of following capacity at full load (Unity Power Factor) ON LINE Uninterrupted Power Supply (UPS) system suitable for Single Phase input, Single Phase output AC Supply. The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch along with provision for manual bypass, suitable isolation transformer for additional protection against neutral faults etc. The UPS systems shall be Microprocessor based Digital Control, using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter with PWM (Pulse Width Modulation) Technology. The quality of design, manufacturing and inspection process should confirm to the relevant Inter-national standards such as IEC/EN/VDE. The operating efficiency of the UPS syst >95% at 100% non-linear loads. Current total harmonic disortion(ITHD)/ total demand distortion (TDD) on the input grid shall be < 5% at 100 %load. (The required LC filters shall be					

	included in UPS cost), extreme power factor kit to be include to limit the input pf to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1) however UPS shall be suitable to take load at 0.7 laging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC single phase 160-270V 50 Hz and delivering output AC supply true sine wave single phase 220/230/240 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins and 150% for 1 minute. Operating temperature 0 to 40 0C, Relative humidity 0-95% non condensing, noise level less than 60db at 1 meter distance, Protection for Under voltage, over voltage, abnormal output voltage, battery over charging, output over current, short circuit, battery deep discharge , 10 KV surge. Display for watt/VA,Amp and Voltage power parameters etc. UPS shall comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI) type UPS (as per standard IEC 62040-1, 2 & 3) .					
	The UPS should be with IGBT Based Inverter Technology, Communication RS232/ RS485/ SNMP port open protocol for BMS integration as per approved by Engineering in charge. Required battery racks, DC breaker of suitable rating and interconnecting copper conductor cable of suitable size and connectors and all required accessories are inclusive in the cost. The UPS should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location etc					
9.1	3 KVA	1	Each	55233.00	55233.00	26.1.2
	Total of SH-IV				**204146.00**	

ABSTRACT OF COST

S.No.	SUB HEAD				AMOUNT	
1	SH-I (Internal EI Work)			Rs.	4609190.00	
2	SH- II (Solar Photovoltaic Power Plant)			Rs.	1357000.00	
3	SH- III (DG SET)			Rs.	422786.00	
4	SH - IV (CCTV CAMERA)			Rs.	204146.00	
	Total				**6593122.00**	
	Say				**6593122.00**	

Assistant Engineer (E)
JCESD, CPWD, Jhansi

Assistant Engineer (E) (P)
CPWD, Gwalior

Executive Engineer (E)
CPWD, Gwalior