1. **Scope of work: ELECTRICAL WORKS**

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| **Name of Work:-** Providing power supply for newly commissioned NCAM STLR 4003D PRINTER Lab at NCAM Office at TDC Building, OU. |
| **Sl. No** | **Description** | **Qty.** | **Unit** |  |
| 1 | Supply, Fabrication, testing, installation and commissioning of cubicle floor mounting type panel board with Copper bus bars fabricated with 16 Gauge CRCA sheet of size 60"x48"x18" deep comprising of following switch gear 1) TPN bus bars of size Copper bus bar Strip of size 30mm x 5mm x 0.762Mtr. long (4Nos) 4 lengths 2) 200A 4 Pole On-Load Change Over Switch with open Execution - 01 no. & 160A 4 Pole MCCB, 25KA - 01 no. 3) 100A 4 Pole MCCB, 25KA - 04 no's 4) 63A 4 Pole MCB, 10KA - 04 no's 5) 6-32A SP MCB, 10KA - 08 no's 6) 100mm x 50mm x 4.7mm C-Channel - 36.62 kgs 7) 50mm x 50mm x 6mm thick Angle Iron - 70.00 kgs 8) 0-415V digital Volt meter of size 96 x 96mm - 01 no. 9) 0-500A digital Ammeter 96 x 96mm 10) LT current transformers with bar primary 100/5Amps to 1000/5 amps - 03 no's 11) selector switches for volt and ammeter - 02 no's 12) Fibre insulators -12 no's 13) LED Indicators - 3 no's 14) Empire tapes, Lock with bolts & nuts etc., complete for phases and neutral equipped with bus bar chambers . The painting of the powder system shall be powder coated duly processing the panel in 7 Tank process with RAL 7032.including all labour charges etc., complete. **Change Over Makes: SOCOMEC / L&T. MCCB Make: Havells / Legrand** | 1 | Each |   |
| 2 | Supply & fixing of 160A 4 Pole MCCB adjustable, Confirms to IS/IEC 60947-2 having Breaking Capacity 25KA with thermal magnetic release Panel Mounted along with suitable size metal enclosure, spreaders (2 Set) on wall including conveyance of all materials and labour charges etc., complete. **Makes : Havells / Legrand** | 1 | Each |   |
| 3 | Supply and fixing of 3-ph, 4way VTPN Distribution board with IP-43 protection (Metal Door) as per IS:13032 with - 1 No 100A, 25kA FP MCCB for incomer and 2 Nos - 63A, 10kA C/D Curve TP MCBs - for outgoing and 6 no's 6-32A 10KA C/D Curve SP MCB's with 250A tinned copper busbar, neutral bar, earth bar and cable ties for cable management, fully shrouded neutral bar, profile blanking modules for unused MCB ways, din bars and detachable gland plate etc., including internal connection and labour charges for surface mounting complete. **Makes: Legrand 712** | 1 | Each |   |
| 4 | Supply & run of 70 Sqmm 3.5 Core XLPE insulated, 1100V grade armoured alluminium cable with ISI mark as per specification confirming to IS:7098 (Part - I) inlcuding all labour charges etc., complete. **Makes : Torrent / Unicab / Polycab / Havells. 918** | 65.00 | 1 mtr |   |
| 5 | Earth work excavation of Trench (0.3m x 0.9m) in hard ground soil, laying of U.G cables upto 70 to 400 Sq,mm on sand cushion of 2.0m depth covering the cable with bricks and back filling of Trench duly providing Cable route Indicators of size 152mm round/ 102mm x 102mm / 152mm x 152mm on every 8 mtrs embedded in C.C including cost and conveyance of materials and labour charges etc., complete. | 20.00 | 1 mtr |   |
| 6 | Supply & run of 4 of 16 Sq.mm FRLSH / HFFR PVC insulated 1100V grade as per IS:694/1990, IS 17048 specifications Copper cable for mains inlcuding all labour charges etc., complete. **Makes : Havells / HPL**  | 6.00 | 1 mtr |   |
| 7 | Supply and fixing of 63A **Industrial insulated plug & socket** 3P+N+E with suitable metal box, 40A FP MCB 10KA, C/D Curve ISI mark including internal connection and labour charges for surface mounting etc., complete. **Makes: Havells** | 1 | Each |   |
| 8 | Supply and fixing Distribution board with 20A single phase plug and Socket, in sheet steel enclosure with 20A SP MCB including internal connection and labour charges for surface mounting etc., complete. Makes : Havells / HPL / Indo Asian (Gold Plus) | 4 | Each |   |
| 9 | Supply, transportation and fixing of **40W** +/ 10% , >/ 2300 lumens, 1200 mm (+/- 10%) length **LED tube light** housing made with alluminium anodised body, wide operating voltage with PF≥0.9, Surge protection: > 2KV, THD<10%, with inbuilt driver and frosted cover CCT:3000K - 6500K as desired by the department as per IS, minimum CRI≥80 etc., on wall / Ceiling with TW round blocks with all accessories including giving connections and all labour charges etc., complete. **Makes : Phillips / Crompton / Bajaj / Havells.** | 14 | Each |   |
| 10 | Supply and fixing of 4-module surface plastic box with suitable cover plate comprising 16A / 6A 1 way 2 Module Combi Socket Modular Socket - 01 no. & 20A DP Mini MCB - 01 no. including internal connection and labour charges for surface mounting etc., complete. **Makes: Havells** | 9 | Each |   |
| 11 | Supply and Fixing of 32mm outer dia Medium grade surface (ISI ) P.V.C. pipe with IS:9537 part 3 regid with all accessories fixing on chromium plated metallic base saddles including all labour charges etc., complete for run of mains. **Makes : Sudhakar / Finolex / Modi / VIP** | 65.00 | 1 mtr |   |
| 12 | Supply and Fixing of 25mm outer dia Medium grade surface ISI P.V.C. pipe with IS:9537 part 3 regid with all accessories fixing on chromium plated metallic base saddles including all labour charges etc., complete for run of mains. **Makes : Sudhakar / Finolex / Modi / VIP** | 400.00 | 1 mtr |   |
| 13 | Supply and Fixing of 20mm outer dia medium grade surface with IS:9537 part 3 regid (ISI ) P.V.C. pipe all accessories fixing on chromium plated metallic base saddles and decolam board for switches for Light, Fan and separate plug point including all labour charges etc., complete. **Makes : Sudhakar / Finolex / Modi / VIP** | 80.00 | 1 mtr |   |
| 14 | Supply and Laying of P.V.C casing and caping (ISI MARK) with double locking arrangments with groover trunking of size not below 12.5mm height **32mm size** with all accessories, duly sealed at points and erected on Wall / Ceiling including cost of all materials and labour charges complete. **Make :Modi ISI or its eqiuivalent make** | 13.00 | 1 mtr |   |
| 15 | Supply and Laying of P.V.C casing and caping (ISI MARK) with double locking arrangments with groover trunking of size not below 12.5mm height **25mm size** with all accessories, duly sealed at points and erected on Wall / Ceiling including cost of all materials and labour charges complete. **Make :Modi ISI or its eqiuivalent make** | 85.50 | 1 mtr |   |
| 16 | Supply and Laying of P.V.C casing and caping (ISI MARK) with double locking arrangments with groover trunking of size not below 12.5mm height **19/20mm size** with all accessories, duly sealed at points and erected on Wall / Ceiling including cost of all materials and labour charges complete. **Make: Modi with ISI or its equivalent make as approved by the department** | 9.00 | 1 mtr |   |
| 17 | Supply & run of 5 of 36/0.3mm (2.5 Sq.mm) FRLSH / HFFR PVC insulated 1100V grade as per IS:694/1990, IS 17048 specifications Copper cable in existing casing for mains and earth continuity inlcuding all labour charges etc., complete. **Makes : Havells / HPL**  | 160.00 | 1 mtr |   |
| 18 | Supply & run of 3 of 36/0.3mm (2.5 Sq.mm) FRLSH / HFFR PVC insulated 1100V grade as per IS:694/1990, IS 17048 specifications Copper cable in existing casing for mains and earth continuity inlcuding all labour charges etc., complete. **Makes : Havells / HPL**  | 120.00 | 1 mtr |   |
| 19 | Supply & run of 5 of 140 /0.3mm (10 Sq.mm) FRLSH / HFFR PVC insulated 1100V grade as per IS:694/1990, IS 17048 specifications Copper cable in existing pipe for mains & earth continuity inlcuding all labour charges etc., complete. **Makes : Havells / HPL**  | 70.00 | 1 mtr |   |
| 20 | Supply & run of 5 of 84/0.3mm (16.0 Sq.mm) FRLSH / HFFR PVC insulated 1100V grade as per IS:694/1990, IS 17048 specifications Copper cable in existing casing for mains and earth continuity inlcuding all labour charges etc., complete. **Makes : Havells / HPL** | 15.00 | 1 mtr |   |
| 21 | Supply & run of 5 of 84/0.3mm (6.0 Sq.mm) FRLSH / HFFR PVC insulated 1100V grade as per IS:694/1990, IS 17048 specifications Copper cable in existing casing for mains and earth continuity inlcuding all labour charges etc., complete. **Makes : Havells / HPL**  | 75.00 | 1 mtr |   |
| 22 | Supply & run of 2 of 56/0.3mm (4 Sq.mm) & 1 of 36/0.3mm (2.5 Sq.mm) FRLSH / HFFR PVC insulated 1100V grade as per IS:694/1990, IS 17048 specifications Copper cable in existing casing for mains and earth continuity inlcuding all labour charges etc., complete. **Makes : Havells / HPL**  | 65.00 | 1 mtr |   |
| 23 | Supply & run of 1 of 140 /0.3mm (10 Sq.mm) FRLSH / HFFR PVC insulated 1100V grade as per IS:694/1990, IS 17048 specifications Copper cable in existing pipe for earth continuity inlcuding all labour charges etc., complete. **Makes : Havells / HPL**  | 107.00 | 1 mtr |   |
| 24 | Supply and fixing of heavy duty long barrel copper lugs confirming to I.S specifications suitable upto 35 sq.mm cable etc complete with nuts, bolts and washers with connections. **Makes: DMI / Jainson / Dowels or equivalent make as approved by the department** | 4 | Each |   |
| 25 | Supply and fixing of heavy duty long barrel copper lugs confirming to I.S specifications suitable upto 70 sq.mm cable etc complete with nuts, bolts and washers with connections. **Makes: DMI / Jainson / Dowels or equivalent make as approved by the department** | 16 | Each |   |
| 26 | Supply and fixing of 16A **Industrial insulated plug & socket** 3P+N+E with suitable metal box, 6-32A FP MCB 10KA, C/D Curve ISI mark including internal connection and labour charges for surface mounting etc., complete. **Makes: Havells, 650** | 6 | Each |   |
| 27 | Wiring with 2 runs of (1.0 Sq.mm) Fire Retardant FRLS / HFFR P.V.C. insulated 1100V as per IS : 694/1990 Specifications flexible copper cable in existing pipe with 10A Modular switch fixing on galvanised hot dip switch box covered with appropriate front plate module, and Ceiling rose , including all labour charges etc., complete for light, bell, fan and exhaust fan points in Non-residential Buildings. **Makes - Wires:- Finolex / RR kabel / Havells; Switches, Sockets & Plates Makes : Legrand Lyncus / GM Four Five / Goldmedal Curve / Anchor Roma Plus / Havells Fabio** | 14 | 1 pt |   |
| 28 | Providing independent earthing by exacavating a pit to a depth of 2.25Mtr in all soils as per size specified in the data for Sophisticated Electronic equipment with 600mm x 600mm x 3.15mm thick copper plate rigidly fixed to 19mm dia 'B' Class G.I Pipe of 2.5Mtr lengthwith funnel as per National Electric Code and earth connection from electrode GI strip of 40mm x 5mm x 200mm length to be bolted with nut bolts to G.I.pipe including 25mm x 3mm copper strip of 6Mtrs length connected from plate to GI strip including filling with 20Kg Salt and 40Kg Charcoal or 40Kg bentonite powder from the bottom of the pipe and providing CC / Brick massonry chamber 450mmX450mmX400mm and covered with R.C.C. Slab including all accessories and labour charges etc complete as per IS specification 732/1982. 1691 | 3 | Each |   |
| 29 | Providing independent earthing for Important equipment with 100mm dia Heavy gauge C.I ( Cast iron ) pipe with Flange 2.5m long enclosed in C.C/ brick massonry chamber of 450m x 450m x 400mm with R.C.C. Slab cover duly providing staggered holes filling with salt and charcoal from the bottom of the pipe giving earth connection from electrode through flange with all accessories and labour charges complete, as per IS specifications 732/1982 (Part II). 1694 | 2 | Each |   |