

**FIRE PROTECTION SYSTEM ESTIMATE FOR MULTIDISCIPLINARY RESEARCH LABORATORY
AND MEDICAL COLLEGE, THIRUVANANTHAPURAM**

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
	Part IV -FIRE PROTECTION SYSTEM				
1.0	FIRE ALARM SYSTEM				
1.1	Supply, installation, testing and commissioning of Addressable type Manual Call Point (break glass type) complete with push button, enclosed in box with provision for cable or conduit coupling. The unit to be painted fire red outside, white inside and written 'In case of fire break glass'.	each	9		
1.2	Supply, installation, testing and commissioning of Hooter cum Speaker at different locations complete with all fixing accessories, etc. under false ceiling, roof, wall, etc, with a time delay of max 30sec, interconnecting lo loop cable complete as required.	each	9		
1.3	Supply, Installation, Testing & Commissioning of 16 bit intelligent Addressable Fire Alarm Panel with 3 loops (each loop accessing at least 120 detectors) including battery backup. The panel shall be microprocessor based with its own micro controller, memory, communication module and fire device loop				
	interface cards for intelligent initiating and indicating devices and should also be networkable in peer-to-peer basis with other Addressable Fire Alarm Panels. The Panel shall be able to give pin point location of all Fire/Fault conditions of addressable units via the address codes for each unit. The Panel shall also be able to automatically switch off all Control Switches when ever any Alarm is triggered.				
	The panel shall have 54 Ah SMF Battery, Keypad operation, L C D unit to indicate Fire / Fault Signal of individual unit, in built printer to log all incoming data etc complete in all respects. operation of speakers. Panel shall have :				
	The Panel shall also have Logic hardware and software built into it for initiating specific AHU tripping, time delay operation of hooter and others as follows :				
	(a) programming software for the system				
	(b) automatic system test activates				
	(c) detector sensitivity adjustments				
	(d) alarm verification				
	(e) Alpha/numerical display				
	(f) provision to connect to PCs and external printers				

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	(g) Support modbus and bacnet protocol.	each	1		
1.4	Supply, installation, testing and commissioning of Analogue Addressable type Optical Smoke Detector (photoelectric type) complete with all accessories like base. base box, etc. to be installed under/above false ceiling, roof and concealed space, etc. interconnecting to loop cable complete as required.	each	158		

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
1.5	Supply, installation, testing and commissioning of Analogue Addressable type Heat Detector (photoelectric type, Fixed cum-rate of rise type) with range upto 60 deg C complete with all fixing accessories like base, base box, etc. to be installed under/above false ceiling, roof and concealed space, etc. interconnecting to loop cable complete as required.	each	32		
1.6	Supply, installation, testing and commissioning of addressable Loop Isolators to protect one area or a number of devices with complete set to be installed under/above false ceiling, roof, concealed space, wall, etc. interconnecting to loop cable complete as required.	each	4		
1.7	Supply, installation, testing, and commissioning of Response Indicators	each	30		
1.8	Supply and laying of 2x 1.5sq.mm copper armoured FRLS cable ISI marked with proper clamping, supports and terminations.	Rm	1137		
	TOTAL FOR FIRE DETECTION & ALARM SYSTEM				
2.0	HYDRANT/SPRINKLER SYSTEM				
2.1	Supply, installation, testing and commissioning of Diesel Engine driven main fire pump suitable for automatic operation and consisting of following: complete in all respect as required. (a) Horizontal type, multistage, split casing, centrifugal pump of cast iron body and bronze impeller with stainless steel shaft, mechanical seal to ensure a minimum pressure of 3.5 kg/sq.cm.at highest and farthest outlet at specified flow of 2280 lpm at 70 m. head conforming to IS 1520				
	(b) Suitable HP, 1500 RPM water cooled with radiator, diesel engine conforming to relevant BS & IS standard complete with auto starting mechanism, 12 volts/24 Volts electric starting equipment, Diesel Tank , exhaust pipe extended up to 1 m. outside pump house duly insulated with 50 mm. thick glass wool with 1.0 mm. thick aluminium sheet cladding, residential silencer, instruments and protection as per specification, stop solenoid for auto stop in the event of fault with audio indications, painted with posts office red colour etc. as required. (c) M.s.fabricated Common base plate coupling, coupling guard, foundation bolts etc. as required.	set	1		

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
2.2	Supply, installation, testing and commissioning of Electric driven main fire pump suitable for automatic operation and consisting of following: complete in all respect as require. (a) Horizontal type, multistage, centrifugal, end suction pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal to ensure a minimum pressure of 3.5 kg/sq.cm. at highest and farthest outlet at specified flow of 2280 lpm at 70m., head conforming to IS 1520.				
	(b) Suitable HP SO cage induction motor, TEFC, synchronous speed 1500 RPM, suitable for operation on 415 volts, 3 phase 50 Hz. AC with IP 55 protection for enclosure, horizontal foot mounted type with Class 'F' insulation, conforming to IS- 325. (c) M.S. fabricated Common base plate, coupling, coupling guard, vibration eliminator, foundation bolts etc. as required.	set	1		

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
2.3	Supply, Installation, testing and commissioning of electric driven pressurisation(Jockey) pump suitable for automatic operation and consisting of following: complete in all respect as required. (a) Horizontal type, multistage, end suction centrifugal pump of cast iron body and bronze impeller with stainless steel shaft, mechanical seal and flow of 180 lpm at 70 m. head conforming to IS : 1520.				
	(b) Suitable HP SQ cage induction motor TEFC type suitable for operation of 415 volts, 3 phase 50 Hz. AC with IP 55 class of protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS : 325, and also with a delay timer of max 30 sec to avoid frequent starts. © M.S. fabricated Common base plate, coupling, coupling guard, vibration eliminator, foundation bolts etc. as required.	set	1		
2.4	Main Fire Pump Panel				
	Supply, Installation, Testing & Commissioning of Fire Pump Panel, cubicle type, made out of 2mm thick CRCA sheet, totally enclosed, IP42, free standing, floor mounting, dust and vermin proof, powder coated, indoor, compartmentalised, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system with busbars extendable on both sides, including internal wiring with suitable size wires, rotary handle, spreader etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per specification.				
	<u>INCOMER</u>				
	1 No. 200A, FP, 25kA, MCCB with Thermal Magnetic release, Ics=Icu, having adjustable over load & short circuit protection.				
	<u>BUSBARS</u>				
	1 Set of 250 Amp TPN busbars of high conductivity electrolytic quality Aluminium alloy.				
	<u>INSTRUMENTS</u>				
	1 No Three phase Digital voltmeter, Acc. Class 1				
	1 No Three phase Digital ammeter, Acc. Class 1				
	1 Set of phase indicating lamps, LED type, RYB.				
	1 Set of ON, OFF, Trip indicating lamps, LED type.				
	2 Set of 2A 10kA C curve SP control MCB.				
	1 Set of 200/5A, Class 1.0, 10VA, Cast Resin CT for metering.				
	<u>OUTGOING</u>				
	Main Electrical Fire Pump				
	1 No. 125A, TP, 35kA, MCCB with Thermal Magnetic release, Ics=Icu, having adjustable over load & short circuit protection.				

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
	1 No Fully automatic Star/Delta starter of suitable rating for 415V, 50Hz, 3 phase main electrical fire pump (approx. 50HP). The starter shall have ON, OFF push button, ON, OFF, complete with all accessories and internal wiring required for automatic and manual operation.				

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
	Jockey Pump				
	1 No. 32A, TP, 25kA, MCCB with Thermal Magnetic release, Ics=Icu, having adjustable over load, short circuit protection.				
	1 No Fully automatic DOL starter of suitable rating for 415V, 50Hz, 3 phase Jockey pump (approx. 7.5HP). The starter shall have ON, OFF push button, ON, OFF, Trip LED indication lamp, thermal over load relay, single phase preventor, complete with all accessories and internal wiring required for automatic and manual operation.				
	Spare				
	1 No. 32A, TP, 25kA, MCCB with Thermal Magnetic release, Ics=Icu, having adjustable over load, short circuit protection.				
	Diesel Engine Control				
	Diesel engine control consisting of:				
	1 No. 16A DP C curve control MCB, 16A On/off control switch.				
	Auto / manual selector switch, 3 attempt starting device, push button etc.				
	All required timers, relays, fuses and accessories for automatic operation of diesel engine.				
	Indication lamp for high water temperature, engine fail to start, engine On indication, high/low lube oil pressure.				
	Necessary control wiring for start / stop solenoid, line / oil pressure switch, temperature switch etc.				
	Battery Charger suitable for 12 V / 24 V DC with boost and trickle selector switch, 0 -15 V / 0 - 30 V DC volt meter, 0 - 20 A DC Ammeter.				
	6 panel annunciation window for fault indication with hooter, accept & reset push button.				
	The system shall include all accessories to control the operation of main electric pump, diesel pump, jockey pump in auto sequence as per the specification.	Set	1		
2.5	a) Supplying, Installation, testing and commissioning of electric driven pump (terrace pump) sets suitable for automatic operation and consisting electrical control panel with DOL Starter and accessories of the following complete in all respect as required				
	Pump rated for 900lpm, 35m head Monobloc type, C.I body volute type coupled with suitable HP SQ cage induction motor, synchronous speed 2900rpm, suitable for operation on 415V, 3phase 50Hz, AC with IP 55 class of protection for enclosure, horizontal foot mounted type with class F insulation,				
	M.S. fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.				
	Suitable cement concrete foundation duly plastered with anti vibration pads.	set	1		

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
2.6	Supply, installation, testing and commissioning of pressure gauge 0-200 PSI (0 - 14 Kg) range, 3/8" BSP bottom entry, 4" dial weather proof with stainless steel internals, siphon tube and ball valve including fittings, etc. complete as required	each	4		
2.7	Supply, installation, testing and commissioning of industrial type pressure switch having 1/4" BSP(F) connection IP:32 enclosure protection, phosphor bronze bellows as sensing element, SDPT contact system, switch rating 6A Inductive/10A resistive 380 V AC, 0.2A Inductive/10A resistive 250V DC suit with ball valve etc. complete as required.	each	4		
2.8	Supplying and fixing air vessel of 250 mm dia 8 mm thick MS sheet, 1200 mm. In height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia Gun metal wheel valve, with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1		
2.9	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589 and 1239 including drop forged fittings like elbows, tees flanges, tapers, nuts bolts, gaskets etc., fixing the pipe on the wall/ceiling with suitable clamps and painting with primer and two or more coats of synthetic enamel paint of required shade complete as required.				
2.9.1	150 mm dia	Rm	64		
2.9.2	100 mm dia	Rm	18		
2.9.3	80 mm dia	Rm	53		

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
2.10	Providing, laying, welding, testing & commissioning of 'B' class medium duty MS pipe conforming to IS 3589 and 1239 including drop forged fittings like elbows, tees flanges, tapers, nuts bolts, gaskets etc., fixing the pipe on the wall/ceiling with suitable clamps and painting with primer and two or more coats of synthetic enamel paint of required shade complete as required.				
2.10.1	80 mm dia	Rm	264		
2.10.2	65 mm dia	Rm	106		
2.10.3	40 mm dia	Rm	68		
2.10.4	25 mm dia	Rm	242		
2.11	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589 / 1239 including drop forged fittings like elbows, tees flanges, tapers, nuts bolts, gaskets etc. in ground including excavation & providing cement concrete blocks as supports, anticorrosive wrapping coating min 2mm thick as per IS10221, refilling the trench with compaction etc. of following sizes complete as required.				
2.11.1	150 mm dia	Rm	319		

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
2.11.2	100 mm dia	Rm	33		
2.12	Supplying, fixing, testing & commissioning of dual plate non-return valve of following sizes confirming to IS : 5312 complete with rubber gasket, GI bolts, nuts, washers etc. as required.				
2.12.1	150 mm dia	each	2		
2.12.2	65 mm dia	each	4		
2.13	Supplying, fixing, testing & commissioning of foot valve complete with bolts, nuts, washers and rubber gaskets etc. conforming to IS:4038 (ISI marked) of sizes:				
2.13.1	150 mm dia	each	2		
2.13.2	65 mm dia	each	1		
2.14	Supplying and fixing, testing & commissioning of double flanged sluice valve of rating PN 1.6 with non rising spindle, with hand wheel for AG applications, bronze/gun metal seat ISI marked complete with nuts, bolts, washers, gaskets, conforming to IS 780 of following sizes as required.				
2.14.1	150 mm dia	each	2		

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
2.14.2	65 mm dia	each	4		
2.15	Supplying and fixing, testing & commissioning of double flanged sluice valve of rating PN 1.6 with non rising spindle, with cap for UG applications, bronze/gun metal seat ISI marked complete with nuts, bolts, washers, gaskets, conforming to IS 780 of following sizes as required.				

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
2.15.1	150 mm dia	each	5		
2.15.2	100 mm dia	each	4		
2.16	Supply, installation, testing and commissioning of Bronze Gate valve conforming to IS:778 (ISI marked) of sizes:				
2.16.1	25 mm dia	each	8		
2.17	Supply, installation, testing and commissioning of gun metal fire hydrant valve, single headed oblique type 63 mm instantaneous outlets with female socket for hose connection and inlet side with flange suitable for 100 mm pipe flange, valve conforming to IS:5290 complete with blank cap chain, etc	each	12		
2.18	Supplying and fixing First-aid Hose Reel with MS construction spray painted in Post office Red, conforming to IS 884 with up to date amendments, complete with the following as required. (a) 30 m. long 20 mm (nominal internal dia water hose Thermoplastic (Textile reinforced) Type-2 as per IS: 12585 (b) 20 mm (nominal internal) dia gun metal globe valve & nozzle. (c) Drum and brackets for fixing the equipments on wall. (d) Connections from riser with 40 mm dia stop valve (gun metal) & M.S. Pipe	set	8		
2.19	Supplying and fixing 63 mm dia, 15 mtr. Long RRL hose pipe with 63 mm dia Male and Female Gun metal couplings duly binded with GI wire, rivets etc. conforming to IS 636 (type-A) as required.	each	24		

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
2.20	Supplying & fixing 63 mm dia Gun metal branch pipe with 20 mm (nominal internal diameter) size Gun Metal nozzle conforming to IS 903, suitable for instantaneous connection to inter-connect hose pipe coupling as required.	each	12		
2.21	Supply, installation, testing and commissioning of hose boxes wall/pedestal type of size 750 x 250 x 600 mm made out of 16 SWG MS sheet steel with front side glass, locking arrangement and painted with approved colour completed as required and as per specifications.	each	12		
2.22	Supply, installation, testing and commissioning of Fire brigade collective breaching with 4 nos. of (twin Siamese) 150 mm flanged out let connection and built in check valves complete as required.	set	2		
2.23	Supply, and fixing of Air release valve all riser pipes as per specification	set	2		
2.24	SITC of Sprinkler Alarm Valve with water motor gong, test valves, drain valves complete with all accessories, set of pressure gauges, supports, etc of following sizes.				
2.24.1	100 mm	each	1		

Sl. No.	Description of item	Unit	Qty	Rate Rs in figures & words	Amount
2.25	Supplying and fixing, testing & commissioning of butterfly valve of rating PN 1.0 with cast Iron body, SG Iron seat ISI marked complete with nuts, bolts, washers, gaskets, conforming to IS 13095 following sizes as required.				
2.25.1	80 mm dia	each	8		
2.26	Supplying, fixing, testing & commissioning Ball Valve Regular bore type with Nickel plated Brass body with female thread(DIN EN ISO 228), hand lever operated				
2.26.1	25 mm dia	each	4		
2.27	Supply, installation, testing, and commissioning of sprinkler bulbs having a temperature rating of 68 degree centigrade	each	255		
2.28	Supplying, fixing, testing & commissioning of Sprinkler Flexible Hose 1000 mm in length, Unbraided, UL Listed along with all necessary accessories like Nipple threaded , Reducing Nipple threaded, Large Bracket with Bolt, Small Bracket with Bolt, Meter Square Bar etc complete as per spec.	each	198		
	TOTAL FIRE HYDRANT/SPRINKLER SYSTEM				
3.0	PORTABLE FIRE EXTINGUISHERS				
3.1	Supply and fixing of Water type Fire Extinguisher 9 litres on wall with hook plate and anchor fastening of ISI marked with internal plastic lining and solid drawn body with 60 grams CO2 cartridge with gun metal plunger and 1.0 M long discharge hose confirming to IS 940 and complete in all respects including initial fill with CO2.	each	33		
3.2	Supply & fixing of of Carbon-dioxide extinguisher on wall of ISI marked 4.5 Kg capacity made of high pressure seamless steel cylinder (CCE marked) confirming to IS 2878, 8149. complete with wheel type valve with one meter long braided high pressure discharge hose complete in all respects including initial fill with CO ₂ gas.	each	5		
	TOTAL Part IV - FIRE DETECTION & FIGHTING SYSTEM				