

Chemical Engineering Equipment

S.No	Item Name	Item Description	Qty
1	Reynold's Apparatus	Tube: Material Borosilicate Glass; ID 14 mm approx., Length: 600 mm; Dye vessel: Material Stainless Steel, Capacity 1 Ltrs. (approx.); Capillary Tube: Material Stainless Steel.; Constant Head Water; Tank: Capacity 40 Ltrs.; Water Circulation: FHP Pump.; Measuring Cylinder: Capacity 1000 ml.; Stop Watch: Electronic; Sump Tank: Capacity 60 Ltrs.	1
2	Bernoulli's Theorem Apparatus	Test Section: Convergent and Divergent section, Material Acrylic. Piezometer; Tubes: Material P.U. Tubes (7 Nos.); Water Circulation: 1/2 HP Pump, Crompton/Standard make.; Flow Measurement: Using Measuring Tank with Piezometer, Capacity 25 Ltrs.; Sump Tank: Capacity 70 Ltrs.; Inlet Tank: Capacity 20 Ltrs. with fixed overflow arrangement.; Stop Watch : Electronic.	1
3	Discharge Through Venturimeter, Orificemeter & Rotameter	Venturi meter: Body Material Acrylic, compatible to 1" Dia. Pipe.; Orifice meter: Body Material Acrylic, compatible to 1" Dia. Pipe.; Orifice plate made of Stainless Steel.; Rotameter: Glass Tube Rotameter.; Water Circulation: 1/2 HP Pump, Crompton/Standard Make; Flow Measurement: Using Measuring Tank with piezometer Capacity 25 Ltrs.; Sump Tank: Capacity 50 Ltrs.; Stop Watch: Electronic; Pressure measurement: By Pressurized differential pressure manometer.	1
4	Losses Due to Friction in Pipe Lines	Pipe Test Section: (i) Dia 1/2", Pr. Taping Length: 1m, Material G.I; (ii) Dia 3/4", Pr. Taping Length: 1.25m, Material G.I; Water Circulation: 1/2 HP Pump, Crompton/Standard make; Flow Measurement: Using Measuring Tank with Piezometer, Capacity 25 Ltrs; Sump Tank: Capacity 50 Ltrs; Stop Watch: Electronic; Pressure measurement: Pressurized Differential Pressure Manometer.	1
5	Flow Through Helical Coil	Helical Coil: Material Stainless Steel Dia – 12" ; No. of Turns: 14 ; Coil Tube Dia: OD 21mm, ID 16mm (Approx.); Sump Tank : Material Stainless Steel, Capacity 50 Ltrs. ; Water Circulation: FHP Pump, Crompton/Sharp make; Pressure Drop Measurement: By Manometer; Flow measurement: Rotameter; Piping: GI and PVC; Control panel comprising of: Standard make On-off switch, Mains Indicator etc.	1
6	Pressure Drop Through Packed Bed	Packed Column: Material Borosilicate Glass with both end made of Stainless Steel Dia. 48 mm approx., Height 750 mm approx.; Packing: Material Borosilicate Glass Rasching rings Size 8-10mm approx.; Water tank: Material Stainless Steel, Capacity 30 Ltrs; Water Circulation: FHP Pump Crompton/Sharp make; Water Flow Measurement: By Rotameter; Pressure Drop Measurement: By Manometer.	1
7	Centrifugal Pump Test Rig Apparatus (With Variable Speed)	Pump: Capacity 1 HP. Speed 2800 RPM (max.), Head 12 m (max.); Medium Flow: Clear Water.; Drive: 1 HP DC motor.; Speed Control: Thyristor controlled.; Sump Tank: Capacity 110 Ltrs. approx.; Measuring Tank: Capacity 70 Ltrs. approx. with Piezometer.; Stop Watch: Electronic; Pressure Gauge: Bourdon type.; Control Panel	1

		Comprises of: Energy measurement: Electronic Energy meter, L&T make.; RPM measurement: Digital RPM Indicator with Proximity sensor.; Standard make On/Off Switch, Mains Indicator, etc.	
8	Gyratory Sieve Shaker (With Sieves)	Power: 1000 Watt (w); Material: Metal; Operate Method: Electric; Voltage: 240 Volt (v); Equipment Materials: Brass; (Diameter-8"); Drive : By ½ HP motor; Sieve assembly: Compatible to BSS Standard sieves of 20-cm dia. (for 6-7 sieves); BSS NO. BSS NO. 4, 5, 6, 7, 8, 10, 12, 14, 16, 18, 22, 25, 35, 44, 52, 60, 72, 85, 100, 120, 150, 170, 200, 240 with a Set of Lid and Pan.	1
9	Jaw Crusher	Jaw: Size 100 x 150mm; Feed Hopper: Suitable capacity; Feed Size: 50mm (approx.); Product Discharge Size: 5mm to 15mm; Drive: Electric motor, 3 HP, Single phase, Control Panel Comprises of: Energy measurement: Electronic Energy meter; Starter: 3 HP, Single Phase. MCB: For overload protection.	1
2ndYear –Sem-II: Heat Transfer Operation Lab			
10	Thermal Conductivity of Liquids	Liquid Chamber, Inner Dia.: 40mm (approx), Length: 120mm (approx). Heater: Rod type Outer Dia.: 38mm (approx). Length: 120mm (approx); Cooling chamber: Made of Stainless Steel for water Circulation Inner Dia.: 70mm (approx). Length: 120mm (approx); Control panel comprising of: PID Controller : 0-199.9°C, Digital Temp. Indicator: 0-199.9°C, with multi-channel switch Temperature Sensors: RTD PT-100 type-4Nos.; Energy meter: Digital type for power measurement With standard make On/off switch, Mains Indicator etc.	1
11	Thermal Conductivity of Metal Rod	Metal Bar: Material: Copper; Length: 400 mm (approx.), Diameter: 25 mm; Insulating shell: Length: 250 mm (approx), Diameter: 200 mm; Cooling Water Jacket: Length: 75 mm, Diameter: 50 mm; Heater: Nichrome Wire; Water Flow measurement: By Measuring cylinder & Stop watch; Control panel comprising of: Digital Temperature Controller: PID Controller, 0-199.9° C; Energy meter: Digital Type for power Measurement; Digital Temp. Indicator: 0-199.9oC, with multi-channel Switch; Temperature Sensors: RTD PT-100 Type - 8 Nos. With standard make on/off switch, Mains Indicator etc.	1
12	Heat Transfer in Natural Convection	Test Section: Material Brass, Diameter 38 mm (approx). Length 500 mm (approx); Heater: Nichrome Wire; Control panel comprising of: Digital Temperature Controller: PID Controller, 0-199.9° C; Energy meter: Digital Type for power Measurement; Digital Temp. Indicator: 0-199.9°C, with multi-channel switch; Temperature Sensors : RTD PT-100 type - 8 Nos., With standard make On/Off switch, Mains Indicator etc.	1
13	Heat Transfer in Forced Convection	Test section: Horizontal, externally heated Diameter: 28 mm (approx.), Length: 400 mm (approx.); Blower: FHP of Standard make.; Heater: Nichrome Wire.; Air Flow Measurement: Orifice meter & Manometer.; Control panel comprising of: Digital Temperature Controller: PID Controller, 0-199.9° C.; Energy meter: Digital Type for power measurement; Digital Temp. Indicator: 0-200°C, with multi-channel switch.; Temperature Sensors: RTD PT-100 type-6Nos. With standard make On off switch, Mains Indicator etc.	1

14	Dropwise & Filmwise Condensation Apparatus	Copper tubes (2 Nos.): one with natural finish and other nickel polished. ID 16 mm, OD: 19 mm (Approx.), Length: 175 mm (Approx.); Water Flow measurement: Rotameter.; Condensate Measurement: Measuring Cylinder & Stopwatch; Steam Generator: 8 Ltrs. (Approx.) made of Stainless steel with 1.5 kW heater. Insulated with ceramic wool and clad by aluminum foil.; Control valves: One each for Steam, Cooling water & Drain; Pressure Gauge: Bourdon type.; Control panel comprising of: Digital Temp. Controller: PID Controller, 0-199.9° C (For Steam Generator); Digital Temp. Indicator: 0-199.9°C, with multi-channel switch.; Temperature Sensors: RTD PT-100 type - 6 Nos. With Standard make On/Off switch, Mains Indicator etc.	1
15	Unsteady State Heat Transfer Unit	Water Bath: Material- stainless steel, Capacity-8 lit. (Approx.); Stirrer for Bath : Stainless Steel Impeller with shaft coupled to a FHP motor.; Heater: Nichrome wire heater; Test Cylinder : One each of Stainless Steel & Brass; Control Panel comprises of: Digital Temp. Controller: PID Controller, 0-199.9°C, (For Water Bath); Digital Temp. Indicator: 0-199.9°C; Temperature Sensors: RTD PT-100 type With Standard make On/Off switch, Mains Indicator etc.	1
16	Stefan Boltzmann's Apparatus	Hemisphere: Dia.- 200 mm (approx.) made of Copper; Jacket: Dia. 250 mm (approx.) made of Stainless Steel; Test Disc Size: 20 mm Dia. x 1.5-mm thickness made of Copper; Water Tank: Stainless Steel 12 Ltrs. capacity; Heater: Nichrome wire immersion heater.; Control panel comprising of Digital Temp. Controller: PID Controller, 0 to 199.9°C (for water tank); Digital Temp. Indicator: 0 to 199.9°C, with multichannel Switch; Temperature sensors: RTD PT-100 type - 2 Nos. With standard make on/off switch, Mains Indicator etc.	1
17	Emissivity Measurement Apparatus	Test plate Diameter: 160 mm (approx.); Black Plate Dia.: 160 mm (Approx.); Heater (2Nos.): Nichrome Wire Heater. (One each for test plate & black plate); Control panel comprising of: Digital Temperature Controller: PID Controller, 0-199.9°C.; Energy meter: Digital Type for power measurement.; Digital Temp. Indicator: 0-199.9°C, with multi-channel Switch; Temperature Sensors: RTD PT100 type - 3 Nos. With standard make On/Off switch, Mains Indicator etc.	1
18	Shell & Tube Heat Exchanger	System: Water to Water. (1 – 2 shell & tube type); Shell: Material Stainless steel. Insulated with ceramic wool and clad with aluminum foil. Dia. 220 mm, Length 500 mm (Approx.) 25% cut baffles at 100 mm distance 4 Nos; Tube: ID 13mm, OD 16mm approx., Length 500mm (24 Nos.); Water Flow Measurement: Rotameters (2Nos.) one each for cold & hot fluid.; Hot Water Tank: Made of Stainless steel (Insulated with ceramic fibre wool); Hot Water Circulation: Magnetic Pump; Heaters: Nichrome wire heater (2 Nos.); Control panel comprising of: Digital Temp. Controller: 0-199.9°C, (For Hot Water Tank); Digital Temp. Indicator: 0-199.9°C, with multi-channel Switch; Temperature Sensors: RTD PT100 type-4Nos. With Standard make On/Off switch, Mains Indicator etc.	1
19	Calandria Evaporator	Evaporator: Material Stainless Steel, insulated with ceramic wool and clad by aluminum foil. OD-250 mm, with central down take of 90	1

		<p>mm Dia ; Feed Tank: Material Stainless Steel; Capacity 20 Ltrs.; Flow measurement: Rotameter 2 Nos. (one each for feed and cooling water); Feed Circulation: By Gravity feed.; Steam Generator: Made of Stainless Steel provided with Pressure Gauge & Level Indicator, Safety valve and drain etc. & insulated with ceramic wool and cladding with Aluminium foil.; Piping: Stainless Steel and PVC, size 1/4"; Condenser: Shell & Tube type made of Stainless Steel.; Product tank: Made of Stainless Steel, capacity 10 Ltrs; Heater: Nichrome wire heater; Water supply tank : Made of Stainless Steel, capacity 50 Ltrs. (for condenser).; Pump: FHP capacity.; Control panel comprises of Digital Temp. Controller: PID Controller, 0-199.9°C, (For Steam Generator); Digital Temp. Indicator: 0-199.9°C, with multi-channel switch; Temp. Sensors: RTD PT-100 type - 6 Nos. With Standard make On/Off switch, Mains Indicator etc.</p>	
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