MODULE I- BATCH PROCESS REACTOR (PCST – 14-I)

Technical Specification: -

No.	Item Name	Technical Specifications
1	DC Geared Motor / Stepper Motor with Card-	Torque: 10/20kgcm , 12 / 24VDC, Speed: 0- 60rpm, Bidirectional **or** Torque: 10/20kgcm , 24VDC, Shaft Length: 20.6 mm, Shaft Diameter: 6.35mm. Bidirectional.
2	Reactant Tank-	10" X 10"X10", MOC Plastic/PP5mm thick/SS304 (1.5mm thick) (1No.)
3	Miniature Heater-	1000W, 230VAC
4	Proximity Sensor -	Type- Inductive, 3 wire, Distance 7mm, 24 V DC
5	Process Tank-	6"X6"X12" (P.P. 5 mm thick) (Quantity: 2 nos.)
6	Stirrer-	230VAC, 2 Speed
7	Thermostat-	24V DC, Range 30-110°C
8	Level Switch-	Magnetic Type, Float operated, NO Contact,24VDC Operated
9	Solenoid Valve-	24VDC, 6mm Orifice, 1/4 "size
10	Power Supply-	I/P = 230 VAC, O/P = 24 V DC, 3A
11	Conveyor Belt-	70mm X 1225mm (Red)
12	Switches-	Mains, 6 Amp (Red)Rocker Switch, 16 Amp (Red)
13	Relay-	24V DC, 1C/O (2 nos.)
14	Electrical Control Panel-	MS Powder coated panel with switches, indicator, test Points, controller on front fascia, UK 2.5 Terminal Connectors mounted on DIN rail channel, Use of 1sq mm multi-strand wire with proper insulated Lugs, Feruling & neat wire dressing & clamping. Wires & power cables are seated through 1''×1''PVC cable tray. Dimension: 2ft (L) ×1ft (W) ×2ft (H)

Range of Experiments:-

- ❖ Study of PLC programming (Optional).
- ❖ Demonstration of Batch Process Reactor.
- ❖ Study of Level Control.
- ❖ Study of Temperature Control.
- ❖ Study of application of solenoid valve, level switches, and proximity switches

MODULE II- ROTARY BOTTLE FILL TRAINER (PCST – 14-II)

Technical Specification:-

No.	Item Name	Technical Specifications
1	DC Geared Motor / Stepper Motor with Card-	Torque: 10/20kgcm , 12 / 24VDC, Speed: 0- 60rpm, Bidirectional **or** Torque: 10/20kgcm , 24VDC, Shaft Length: 20.6 mm, Shaft Diameter: 6.35mm. Bidirectional.
2	Sump Tank-	1'X1'X1', (P.P. 5mm thick)
3	Process Tank-	6"X6"X16" (P.P. 5 mm thick) (Quantity: 2 nos.)
4	FHP Pump-	230VAC (Submersible)
5	Level Switch-	Magnetic Type, Float operated, NO Contact, 24VDC Operated
6	Solenoid Valve-	24V DC single phase, ¼"size
7	Proximity Sensor-	Type: Capacitive, 3 Wire, Sensing Distance: 12mm, 24 VDC
8	Optical Sensor-	3 Wire, Sensing Distance: 10cm, 24 VDC
9	Relay-	24V DC Coil, 2 C/O
10	Coolant Pipe	Length 1', ¼" Size
11	Electrical Control Panel-	MS Powder coated panel with switches, indicator, test Points, controller on front facia, UK 2.5 Terminal Connectors mounted on DIN rail channel, Use of 1sq mm multi-strand wire with proper insulated Lugs, Feruling & neat wire dressing & clamping. Wires & power cables are seated through 1''×1''PVC cable tray. Dimension: 2ft (L) ×1ft (W) ×2.5ft (H)

Range of Experiments:-

- ❖ Study of PLC programming (Optional).
- ❖ Demonstration of Rotary Bottle Fill Trainer.
- ❖ Study of Level Control.
- ❖ Study of application of solenoid valve, level switches, and proximity switches

MODULE III- DC MOTOR SPEED CONTROL MODULE (PCST – 14-III)

The **DC Motor Speed Control Module** outlines the principal of Speed Control of DC Motor through PLC used in industrial applications. This setup is to be hooked up with PCST-14 (PLC Programming Trainer).

Technical Specification:-

No.	Item Name	Technical Specifications
1	**PMDC Motor-**	12V DC, 1500 RPM, 1.5 Amp, Torque: ½ Kgcm, Mounting Horizontal
2	**Optical Sensor / Proximity Sensor-**	3 Wire, Sensing Distance: 07mm, 24 VDC
3	**RPM Indicator/ Tachometer-**	Retransmission O/P: 4-20mA as per 0-1500rpm, 3 ½ digital display Speed: 0-1500 RPM, Supply: 230V AC, Cut out size :92 X 92
4	**DC Drive-**	Power Supply: 230 V AC, Input: 4-20mA, Output Voltage. 0-12 V DC.
5	**Electrical Control Panel-**	MS Powder coated panel with switches, indicator, test Points, controller on front facia, UK 2.5 Terminal Connectors mounted on DIN rail channel, Use of 1sq mm multi-strand wire with proper insulated Lugs, Feruling & neat wire dressing & clamping. Wires & power cables are seated through 1''×1''PVC cable tray. Dimension: 1 ft (L) × 1 ft (W) × 1 ft (H)

Range of Experiments:-

❖ Study of PLC programming (Optional).
❖ Demonstration of DC Motor Speed Control..
❖ Study of application of Optical / Proximity switches.

MODULE IV- STAR-DELTA STARTER (PCST – 14-IV)

The **Star-Delta Starter** outlines the principal of Star & Delta Mode of 3ø AC Induction Motor used in industrial applications. It explains the different different application of PLC; this setup is to be hooked up with PCST-14.

Technical Specification:-

No.	Item Name	Technical Specifications
1	**Voltmeter with Voltage Transformer-**	Power Supply:230VAC, Range: 0-1100V, with 3½ Digit Display
2	**Ammeter with Current Transformer-**	Power Supply:230VAC, Range :0-5 A
3	**Motor-**	Star-Delta type, (415V-Y/415V-Δ),3ϕ, ½ HP Induction Type, 2 A
4	**Relay-**	Power Supply: 230VAC, 10 Amp, (2 c/o & 3 c/o)
5	**Power supply-**	I/P: 230VAC, Output: 24VDC, 3A
6	**Contactor-**	24 V DC Operated, 3 C/O, 10 Amp, Siemens/L&T/Equivalent
7	**Electrical Control Panel-**	MS Powder coated panel with switches, indicator, test Points, controller on front facia, UK 2.5 Terminal Connectors mounted on DIN rail channel, Use of 1sq mm multi-strand wire with proper insulated Lugs, Feruling & neat wire dressing & clamping. Wires & power cables are seated through 1''×1''PVC cable tray. Dimension: 1 ft (L) × 1 ft (W) × 1 ft (H)

Range of Experiments:-
- ❖ Study of PLC programming (Optional).
- ❖ Demonstration of Star-Delta Starter.

MODULE V- DISCRETE APPLICATION TRAINER (PCST – 14-V)

The **Discrete Application Trainer** outlines the principal of discrete application Through PLC used in industrial applications. It explains the different application of PLC; this setup is to be hooked up with PCST-14.

Technical Specification:-

No.	Item Name	Technical Specifications
1	PMDC Motor-	12V DC , 1500 RPM, 1.5 Amp, Torque: ½ Kgcm, Wall Horizontal
2	Alarm Annunciator-	230 V AC, 4 Window, Reset; Accept Function
3	Optical Encoder-	Shaft Encoder with Pointer Channels= R=ABZ/ Q=AB/ A=A, PPR:360, Shaft Ø: 10mm, Connection Location: EG=End Gland.
4	Stepper Motor-	24VDC, 30rpm, 2.6 kgcm
5	Proximity Sensor-	Type: Inductive, 3 Wire, Sensing Distance: 5 mm, 24 VDC
6	Indicating Lamp-	24 V DC, LED type, 16mm cut out (Red, Green & Amber)
7	MCB-	230 V AC, 10 Amp, Single Pole
8	Limit Switch-	Lever Type, Single C/O, AC/DC operated
9	Toggle Switch-	SPST, SPDT, 6 Amp AC/DC Operated
10	Power Supply-	I/P = 230V AC, O/P = 24V DC, 3A
11	Voltage Regulator-	Supply Voltage 230 VAC, O/P: 0-12 V DC
12	Electrical Control Panel-	MS Powder coated panel with switches, indicator, test Points, controller on front facia, UK 2.5 Terminal Connectors mounted on DIN rail channel, Use of 1sq mm multi-strand wire with proper insulated Lugs, Feruling & neat wire dressing & clamping. Wires & power cables are seated through 1''×1''PVC cable tray. Dimension: 1.5 ft (L) × 0.5 ft (W) × 1.5 ft (H)

Range of Experiments:-

❖ Study of PLC programming (Optional).
❖ Demonstration of Discrete Application Trainer.
❖ Study of traffic light control.
❖ Study of application of Alarm Annunciator, DC Motor, and proximity switches.

MODULE VI- DENSITY BASED TRAFFIC LIGHT CONTROL (PCST – 14-VI)

The **Density Based Traffic Light Control** outlines the principal of absorbing the light density through Opto-Coupler Sensor used in industrial applications. It explains the different application of PLC; this setup is to be hooked up with PCST-14.

Technical Specification:-

No.	Item Name	Technical Specifications
1	Opto-coupler sensor with power supply-	24VDC Operated,M18, PNP, NO-DS, 100mm light sensor with power supply Unit, 2 C/O, 230 VAC.
2	Bulb with Holder-	230 V AC, 60 watt
3	Indicating Lamp-	24 V DC, LED type, 16mm cut out (Red, Amber & Green)
4	Electrical Control Panel-	MS Powder coated panel with switches, indicator, test Points, controller on front facia, UK 2.5 Terminal Connectors mounted on DIN rail channel, Use of 1sq mm multi-strand wire with proper insulated Lugs, Feruling & neat wire dressing & clamping. Wires & power cables are seated through 1''×1''PVC cable tray. Dimension: 1.5 ft (L) × 0.5 ft (W) × 1.5 ft (H)

Range of Experiments:-
- ❖ Study of PLC programming (Optional).
- ❖ Demonstration of Traffic Light Control.
- ❖ Study of application of Opto-coupler Sensor.