



Q. P. Code: 37831

(3 Hours)

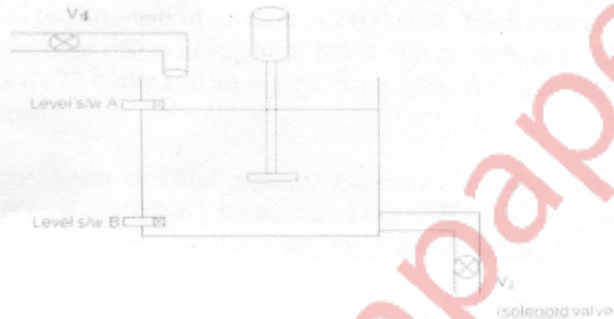
[Total Marks: 80]

N.B: (1) Question No. 1 is compulsory.

(2) Attempt any **Three** questions from remaining.

(3) Figures to the right indicate full marks.

1. Answer the following:- [20]
- What do you understand by automation and explain the benefits of automation.
 - What are DCS displays? Explain the Overview display in detail.
 - Explain how RTU communicates by the field and MTU in SCADA with neat sketch.
 - What is the difference between BPCS & SIS?
2. a) Explain with suitable example Data File Representation for "input status file" and "output Status file" in PLC memory for a modular structure of PLC comprising Analog and Discrete I/O. [10]
- b) What are IEC standard PLC languages? Write a PLC Program using for a tank which is sequenced to mix the liquid fertilizer according to following sequence:- [10]



- Start PB is pressed to start operation & V1 is open to fill the tank up to level A.
- As the tank fills, a level s/w A close NO contact to energize stirrer motor to start automatically & operate it for 15 sec to mix the fluid.
- When stirrer stops, V2 opens to empty tank.
- When the tank is completely empty s/w B opens and de-energizes the solenoid valve V2.
- A stop button is pressed to stop operation.

3. a) Draw and explain the working of DCS architecture. Explain the signal flow for one typical ANALOG flow loop. [10]
- b) Explain the Lower level computer tasks and Higher level computer tasks in detail. [10]
4. a) What are the different applications of SCADA. Explain how SCADA can be used in the application of the pipeline monitoring system. [10]
- b) Explain Protocol structure used in SCADA communication. [10]
5. a) What are independent protection layers? Explain the significance of all these layers with reference to SIS? [10]
- b) What is the need of Alarm Management System? Name the standards related to AMS. Elaborate Alarm lifecycle model. [10]
6. a) Compare PLC, DCS and SCADA system. Give an application area of each. [10]
- b) Justify the significance of special purpose module in PLC with example. [10]
