

22644

12425

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answer with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following:** **10**
- a) Draw P and ID symbol of level transmitter and orifice plate.
 - b) State master-slave concept in cascade control.
 - c) Draw the block diagram of adaptive control system. Explain the blocks.
 - d) Define :–
 - i) CV
 - ii) Rangeability of a control valve.
 - e) State the principle of evaporator.
 - f) List any two safety interlocks in boiler.
 - g) State the types of drying process (Any four).

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw the process diagram for a temperature control loop. Explain its functioning.
 - b) Describe the working of single seated globe valve with diagram.
 - c) Describe the working of ratio control with suitable diagram.
 - d) Enlist the documents used in project engineering. State the importance of data sheet.
- 3. Attempt any THREE of the following:** **12**
- a) Draw control valve characteristics. Give meaning of any one.
 - b) Describe the working of split range control system with diagram.
 - c) Describe the working of distillation column process with diagram.
 - d) Name the process displays used in DCS. Explain any one in detail.
- 4. Attempt any THREE of the following:** **12**
- a) Draw the block diagram of process control system. Explain each elements.
 - b) Name the noise problems in control valve. Explain cavitation with relevant diagram.
 - c) Compare feedback control system with feed forward control system. (Four points)
 - d) Draw and explain feed forward control scheme of single effect evaporator.
 - e) State the selection criteria of DCS System.
- 5. Attempt any TWO of the following:** **12**
- a) State the need of valve positioner. Draw the neat sketch and describe the working of motion balance valve positioner.
 - b) Draw the block diagram of cascade control system. Apply this scheme for heat exchanger.
 - c) Draw the architecture of DCS. Describe the functions of each element.

6. Attempt any TWO of the following:**12**

- a) Describe the working principle of boiler. Apply ratio control scheme to boiler.
 - b) Draw the schematic of shell and tube heat exchanger. Apply feed forward control scheme to heat exchanger.
 - c) Apply cascade control to dryer with suitable diagram and explanation.
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