

22542

11920

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data, if necessary.
(5) 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) Define :
 - (i) Controlled variable
 - (ii) Manipulated variable
- b) Explain Live zero concept.
- c) State the need of DAS.
- d) Draw the diagram of flat type control panel.
- e) Give the meaning of IP 54.
- f) Explain any one process characteristics.
- g) Classify the following into appropriate hazardous area :
 - (i) hydrogen
 - (ii) Coal

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Define -
 - (i) Dead time
 - (ii) Inertia
 - (iii) Resistance lag
 - (iv) Capacitance lag
 - b) Describe the working of temperature transmitter with diagram.
 - c) Draw the block diagram of single channel DAS. Explain it in brief.
 - d) Explain current to pressure converter with neat diagram.
- 3. Attempt any THREE of the following:** **12**
- a) Describe the operation of flapper - nozzle mechanism.
 - b) Name the documents needed to design a control panel. Explain any one in brief.
 - c) Describe any four ergonomic considerations of control room environment.
 - d) Describe the intrinsic safety technique using zener barrier circuit.
- 4. Attempt any THREE of the following:** **12**
- a) Draw the block diagram of process control system. Explain each block in brief.
 - b) Describe the calibration procedure of DP transmitter.
 - c) Explain pressure to current converter with neat diagram.
 - d) Explain the purging protection method used in hazardous area.
 - e) Compare pneumatic and electronic signal transmission systems. (four points)

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

- a) Draw the block diagram of SMART transmitter. Explain its working.
- b) Describe the working of data logger with diagram. List its application. (Any two)
- c) Explain the meaning of hazardous area. Give the classification of hazardous area according to the material.

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

- a) Explain the working of force balance type pressure transmitter with diagram.
 - b) Explain the working of X-Y recorder with diagram. State its any two applications.
 - c) State the need of alarm annunciator. Draw its schematic and describe its operational sequence.
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