



17540

21415

3 Hours/100 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.
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**MARKS**

1. A) Attempt **any three** :

**12**

- a) Draw block diagram of X-Y recorder. Label the parts. State any 2 advantages of it.
- b) List four different types of process characteristics. Describe any one in brief.
- c) Draw neat labelled diagram of I/P convertor.
- d) Explain need of transmitter in process Industries. State current standard signal range of electronic transmitter.

B) Attempt **any one** :

**6**

- a) Draw block diagram of data logger. Explain its working.
- b) State the need of converter. Draw and explain any signal converters which uses flapper-nozzle mechanism.

2. Attempt **any two** :

**16**

- a) Classify Hazardous area according to material.
- b) Define calibration. Explain calibration of pressure gauge by dead weight tester.
- c) Draw layout of control room. Describe ergonomic considerations for control room.

**P.T.O.**

3. Attempt **any four** :

- a) Draw the circuit of Zener barrier. Explain its working.
- b) Draw the neat diagram of Single Channel Data Acquisition System. State function of each component.
- c) Draw and explain the block diagram of process control system.
- d) State four applications of Data Acquisition System in process industries.
- e) Give meaning of IP 55 and IP 64.

4. A) Attempt **any three** :

12

- a) State which transmitter is preferred in Hazardous area ? Why ?
- b) How explosion proofing method of protection used in Hazardous area ?
- c) Draw neat diagram of P/E convertor. Explain its working.
- d) Explain IP classification in brief.

B) Attempt **any one** :

6

- a) Explain need of recorder. Draw labelled block diagram of strip chart recorder.
- b) Draw neat labelled diagram of electronic DP transmitter. Explain its working.

5. Attempt **any two** :

16

- a) Draw diagram of pneumatic DP transmitter. Explain its working.
- b) Draw schematic diagram of alarm annunciator. Describe its operational sequence.
- c) State need of control panel (any four points). State types of control panel. Draw diagram of any one type of control panel.

6. Attempt **any four** :

16

- a) State any four applications of DAS in industry.
  - b) List any four benefits of process instrumentation in industries.
  - c) Draw neat circuit diagram of V to I convertor. Explain its working in brief.
  - d) Describe HART communication protocol in brief with diagram.
  - e) List three types of process dynamics. Describe any one.
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