22542

24225

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following : **10**

(a) List the benefits of process instrumentation.

(b) State the need of signal transmission system.

(c) State the need of DAS.

(d) State the need of Control Panel.

(e) Classify the following materials into appropriate hazardous area :

(i) Hydrogen

(ii) Naphta

(f) State the term 'Process load'.

(g) Explain the term 'hazardous area'.

2. Attempt any THREE of the following : **12**

(a) Explain with neat block diagram the process control system.

(b) Explain 'Live Zero' concept.

(c) Explain with a neat block diagram the working of multichannel DAS.

(d) Sketch Control room layout.

3. Attempt any THREE of the following : **12**

(a) Explain with a neat diagram the working of Flapper, Nozzle mechanism.

(b) Explain with a neat diagram the working principle of current to pressure converter.

(c) Explain operational sequence of alarm annunciator.

(d) Give the meaning of IP14 and IP43.

4. Attempt any THREE of the following : **12**

(a) Explain term :

(i) Dead time

(ii) Inertia

(b) Explain calibration procedure of DP transmitter.

(c) Explain the salient features of smart transmitter. (Any Four)

(d) List documents needed for designing control panel.

(e) Describe with a neat circuit diagram the intrinsic safety technique using passive Zener barrier.

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

(a) Explain with a neat diagram the working of pneumatic temperature transmitter. Give the standard output signal range of pneumatic transmitter.

(b) Explain with a neat block diagram the working of data logger. Give application of data logger. (Any two)

(c) Explain any three protection methods.

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

(a) Explain with a neat diagram the working of electronic pressure (force balance type) transmitter. Give the standard output signal ranges of electronic transmitter.

(b) Explain with a neat diagram the working of strip chart recorder. Give applications of recorders. (Any two)

(c) Differentiate between Flat, Breakfront and Console type control panel. (Any three points)
