17434

21718

3 Hours / 100 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.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any SIX : **12**

(a) Define transducer. Give two examples.

(b) State classification of flow meters.

(c) Define laminar flow and turbulent flow.

(d) Draw only diagram of capsule.

(e) List four electric pressure transducer.

(f) State the necessity of transducer.

(g) Define (i) Absolute Humidity
(ii) Relative Humidity.

(h) List the four different units of pressure.

(B) Attempt any TWO : **8**

(a) What is piezoelectric effect ? Name two piezoelectric material.

(b) Describe principle of operation of Doppler type ultrasonic flow meter with diagram.

(c) Draw the constructional detail of 'C' type bourdon tube and explain its working.

2. Attempt any FOUR : **16**

(a) Draw block diagram of instrumentation system. State function.

(b) Draw the experimental setup to measure pressure in terms of voltage. Also discuss which types of transducer used in it.

(c) State comparison between PTC and NTC.

(d) What is pressure calibration ? State stepwise procedure to test the accuracy of a pressure gauge with dead weight tester.

(e) Differentiate between float type measurement and capacitive type measurement for level measurement.

(f) What is pyrometry ? Describe working of optical pyrometer with neat diagram.

3. Attempt any FOUR : **16**

(a) With neat diagram, explain working of capacitance level measurement.

(b) Explain working principle of bimetallic thermometer.

(c) State two advantages and two disadvantages of radiation type level measurement.

(d) State two advantages and two drawbacks of liquid filled and gas filled thermometer.

(e) Explain the need of level measurement.

(f) Compare RTD and thermistor on the basis of temperature co-efficient, linearity, temperature range and cost.

4. Attempt any FOUR : **16**

(a) Draw construction diagram of LVDT with label. Also state the application of LVDT.

(b) State two advantages and two disadvantages of photoelectric pick-up speed measurement method.

(c) Describe working of venturimeter with neat sketch.

(d) What is techometer ? Explain photo electric pick-up.

(e) What is a psychometer ? Draw neat diagram of sling type hygrometer.

(f) Describe working principle of ultrsonic level detector with diagram.

5. Attempt any FOUR : **16**

(a) Compare active and passive transducer. (any 4)

(b) Convert 280 mm Hg pressure level in bars, PSia, killopascal and microns.

(c) What is capsule ? How it is used for pressure measurement ?

(d) Compare contact type and non-contact type speed measurement method.

(e) Compare thermo couple and thermistor.

(f) Sketch constructional diagram of the operation of electromagnetic flow meter. State its two limitation.

P.T.O.

6. Attempt any FOUR : **16**

(a) Compare between U tube and well type manometers. (any 4)

(b) Calculate the output resistance of PT 100 RTD for temperature value 30 °C and 75 °C.

(c) Draw neat sketches of linear and rotary potentiometer liquid level gauges.

(d) Draw neat diagram of gas filled thermometer. State its operating range and material used.

(e) Draw a diagram of radar level measurement. Write an advantage and disadvantage of it.

(f) With the help of neat sketch, state working principle of rotameter.
