

Total No. of Questions : 12]

SEAT No. :

P4592

[Total No. of Pages : 3

[4957] - 173

Time : 3 Hours]

[Max. Marks :100

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat diagram must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Use of Logarithmic tables, electronic Pocket calculator and steam table is allowed.*
- 5) *Your answer will be valued as a whole.*
- 6) *Assume suitable data if necessary.*
- 7) *Solve sections in separate answer sheet*

SECTION - I

- Q1)** a) Define with example **[10]**
- | | |
|------------------------|------------------------|
| i) Sensor | ii) Transducer |
| iii) Active Transducer | iv) Passive Transducer |
| v) Calibration | |
- b) Explain selection criteria of sensor. **[8]**

OR

- Q2)** a) Explain performance characteristics of sensors. **[10]**
- b) Classify following transducers as active or passive transducers **[4]**
- | | |
|---------------------------|------------------------------|
| i) LVDT | ii) Thermocouple |
| iii) Strain Gauge | iv) Piezoelectric sensors |
| v) Capacitive level probe | vi) P ^H electrode |
| vii) Turbine flow meter | viii) RTD |
- c) Displacement sensor's output ranges from 1kOhm to 5kOhm for the displacement of 0 to 1000mm. find the sensitivity of sensors. If error is $\pm 2\%$ find the output of sensor at 700mm displacement. **[4]**

P.T.O.

- Q3)** a) Explain working principle of manometer. How range can be improve with inclined manometer? [6]
b) Explain temperature measurement using fluid expansion system. [4]

OR

- Q4)** a) List four units of force and give their conversion factor. [4]
b) Explain diaphragm as pressure sensor with neat sketch. [8]
c) Explain flat spiral spring with neat sketch. [4]

- Q5)** a) Explain level to pressure measurement. [8]
b) Explain any hydrometer with neat sketch. [8]

OR

- Q6)** a) Explain flow measurement using pitot tube. [8]
b) Explain Air bubbler method for level measurement. [8]

SECTION - II

- Q7)** a) Explain working RTD with neat sketch. [8]
b) Explain working of LVDT with neat sketch. [8]

OR

- Q8)** a) Explain strain gauge with neat sketch. [8]
b) Explain eddy current type tachometer. [8]

- Q9)** a) Explain working of thermocouple with neat sketch. [8]
b) Explain electromagnetic flow meter with neat sketch. [8]

OR

- Q10)** a) Explain combinational p^H electrode with neat sketch. [8]
b) Explain photovoltaic transducers. [8]

- Q11*)a) Explain self balancing system. [9]
b) Explain magnetic tape recorder. [9]

OR

- Q12*)a) Explain Feedback transducer systems. [9]
b) Explain data display and recording system. [9]

