



17528

14115

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.**
(5) **Use of Non-programmable Electronic Pocket Calculator is permissible.**
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MARKS

1. a) Attempt **any three** : **12**
- i) Define the term, "Threshold" "Resolution", "Repeatability" and "Reproducibility".
 - ii) Compare the term "Accuracy and Precision" (four points).
 - iii) List low pressure measurement gauges and explain any one in detail.
 - iv) Describe construction and working principle of "Bourden tube".
- b) Attempt **any one** : **6**
- i) Define transducer. Explain the classification of transducers with suitable example.
 - ii) Draw neat sketch of RVDT, explain its working and state any two applications.
2. Attempt **any two** : **16**
- a) Define error. Explain the detail classification of error.
 - b) Draw a neat sketch of linear potentiometer for displacement measurement, explain its working. State any four applications of it.
 - c) List the electrical and non-electrical method for temperature measurement. Explain with neat sketch liquid in glass thermometer.
3. Attempt **any four** : **16**
- a) Describe construction and working principle of "Piezoelectric type pressure transducer".
 - b) A Wheatstone bridge requires a change of $7\ \Omega$ in the unknown arm of bridge, it produces a change in deflection of 3 mm of galvanometer. Determine the sensitivity and deflection factor.
 - c) What is thermistor ? Explain the working of a thermistor.
 - d) Explain the seebeck and peltier effect.
 - e) Explain radiation pyrometer with neat sketch.

P.T.O.



4. a) Attempt **any three** : 12
- i) Explain the law of :
 - a) Intermediate temperature
 - b) Law of intermediate metal.
 - ii) Draw the labeled sketch of hot wire anemometer and explain its working.
 - iii) Explain the working of stroboscope with neat sketch.
 - iv) Draw and explain hair hygrometer for humidity measurement.
- b) Attempt **any one** : 6
- i) Define with examples :
 - 1) Automatic control system
 - 2) Closed loop system
 - 3) Open loop system.
 - ii) State different modes of control actions used in control systems and explain in brief ON-OFF controller.
5. Attempt **any two** : 16
- a) Define strain gauge. List the types of strain gauge. Explain the construction and working of bonded strain gauge with the help of diagram.
 - b) Compare the hydraulic, pneumatic and electronic control system (four points).
 - c) i) Draw and explain the measurement and control set up for speed control of a motor.
 - ii) What is servomotor mechanism ? Explain its importance in control system.
6. Attempt **any four** : 16
- a) Explain the working of rotameter with the help of neat diagram.
 - b) How flow is measured by hot wire anemometer ?
 - c) Explain the working of ultrasonic flow meter with a neat sketch.
 - d) Explain with neat sketch the working of capacitive transducer per liquid level measurement.
 - e) Explain with neat sketch the working of slipping clutch tachometer.
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