

# 313319

**12526**

**3 Hours / 70 Marks**

Seat No. 

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- 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) Use of Non-programmable Electronic Pocket Calculator is permissible.  
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

- 1. Attempt any FIVE of the following :** **10**
- a) List the types of error in instrumentation system.
  - b) Define Transducer.
  - c) List the applications of strain guage.
  - d) Define :
    - i) Gauge pressure
    - ii) Absolute pressure
  - e) State the different types of flow.
  - f) Classify speed transducers.
  - g) State the necessity of signal conditioning.

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- 2. Attempt any THREE of the following : 12**
- a) State the selection criteria of transducer.
  - b) Explain with neat sketch bonded strain gauge.
  - c) Describe working of optical pyrometer with neat sketch.
  - d) Explain with neat sketch hair hygrometer for humidity measurement.
- 3. Attempt any THREE of the following : 12**
- a) Draw and explain block diagram of instrumentation system.
  - b) Explain the working of LVDT with neat sketch.
  - c) Explain construction and working of MCLeod gauge.
  - d) Explain with the block diagram of data acquisition system.
- 4. Attempt any THREE of the following : 12**
- a) Explain the working of load cell with neat sketch.
  - b) Explain the working of Piezo electric pressure transducer with neat sketch.
  - c) Draw the diagram of Rotameter and state its advantages.
  - d) Draw and explain working of carbon microphone.
  - e) Describe instrumentation amplifier using three operational amplifier.
- 5. Attempt any TWO of the following : 12**
- a) Explain eddy current dynamometer with neat sketch and write its advantages.
  - b) Sketch the constructional detail of C type bourdon tube and explain its working.

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**Marks**

- c) Compare orifice plate and venturi tube with reference to
- i) Working principle
  - ii) Construction
  - iii) Maintenance cost
  - iv) Use
  - v) Material used
  - vi) Cost

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

**12**

- a) Explain the construction, working principle of RTD.
  - b) Describe the working principle of ultrasonic method of level measurement with sketch. State its two advantages and disadvantages.
  - c) Draw and explain the method of speed measurement using stroboscope. State the applications of it.
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