

313319

12425

03 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) Assume suitable data, if necessary.
 - (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) Classify transducers.
 - b) List application of strain gauge. (any two)
 - c) State different type of errors in measurements.
 - d) State any four speed measuring devices.
 - e) Draw neat sketch of pressure measurement using bourdon tube with LVDT.
 - f) Define signal conditioning.
 - g) State classification of level measurement technique.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Compare active and passive transducer. (Any four points)
 - b) Explain block diagram of digital data acquisition system.
 - c) Explain with neat sketch the working principle of Bellow.
 - d) Explain with neat sketch construction and working of RTD.
- 3. Attempt any THREE of the following:** **12**
- a) Explain the block diagram of instrumentation system.
 - b) Explain the working principle of potentiometric transducer with neat diagram.
 - c) Explain with sketch of Mcleod gauge.
 - d) Explain working of rotameter with neat diagram.
- 4. Attempt any THREE of the following:** **12**
- a) Explain strain gauge load cell with neat diagram.
 - b) Explain the working of piezoelectric transducer for pressure measurement.
 - c) Draw experimental setup of humidity measurement using hair hygrometer and explain its working principle.
 - d) Describe need and function of signal conditioning.
 - e) Draw only circuit diagram of instrumentation amplifier using three op-amp. Write its output equation.
- 5. Attempt any TWO of the following:** **12**
- a) Explain eddy current dynamometer with neat sketch. Write it's advantages (Any two)
 - b) i) Compare orifice and venturi tube flowmeter. (Any four points)
ii) Define Reynolds number.
 - c) i) Explain revolution counter with neat sketch.
ii) Classify speed transducers.

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

- a) i) Draw constructional details of C type bourdon tube and explain its working.
 - ii) List materials used for Bourdon tube.
 - b) Draw neat sketches of linear and rotary potentiometer liquid level gauges. Also identify the primary and secondary transducer in this setup.
 - c) Draw and explain the method of speed measurement using a stroboscope. State its any two applications.
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