

R09**Code: 9A10502**

B.Tech III Year I Semester (R09) Supplementary Examinations June 2017

INDUSTRIAL INSTRUMENTATION

(Electronics & Instrumentation Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) Explain the principle of working of linear variable differential transformer (LVDT) with the schematic diagram.
(b) Explain how coordinate measuring machines are used to measure dimensions of a component.
- 2 (a) Explain the use of gyroscopes in angular velocity measurement.
(b) Explain pendulous angular displacement sensor.
- 3 (a) Explain the principle of vibration wire force transducer.
(b) Describe the construction and working for strain gauge load cell for the measurement of force.
- 4 (a) What is the theory of operation of dead weight tester? What precautions should be observed while calibrating with dead weight tester?
(b) Describe ionization gauge. How does it differ from the Pirani gauge? What disadvantages does it have?
- 5 (a) The water flows at the rate of $0.015 \text{ m}^3/\text{s}$ through a 100 mm diameter orifice used in a 200 mm pipe. What is the difference in pressure head between upstream and vena contracta section? Take the co-efficient of contraction and discharge as 0.6 each.
(b) Describe the structure and working principle of the following:
(i) Angular momentum mass flow meter.
(ii) Coriolis force mass flow meter.
- 6 (a) What are the sources of error in filled in systems? How are they compensated?
(b) Describe the principle, construction, characteristics and application of bimetallic thermometers with illustration.
- 7 (a) Describe the measurement of level using bubbler tube method.
(b) Describe in detail how mounting issues to be addressed with respect to the level measurement in atmospheric vessels and pressurized vessels.
- 8 (a) Write short notes on psychrometers.
(b) Explain the measurement of viscosity using rotameter type viscometer.
