

Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :3

**P2867**

**[4958] - 1056**

**T. E. (Electronics)**

**INSTRUMENTATION SYSTEMS**

**(304209) (End - Sem) (2012 Pattern)**

*Time : 2½ Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
- 2) Neat diagram must be drawn whenever necessary.*
- 3) Figures to the right side indicate full marks.*
- 4) Assume suitable data if necessary.*

- Q1) a)** Differentiate between active and passive transducers. **[4]**
- b) Explain Bourdon tube and Diaphragms for pressure measurement. **[6]**
- c) An RTD has  $\alpha = 0.004/^\circ\text{C}$ . If  $R = 106 \Omega$  at  $20^\circ\text{C}$ , find the resistance at  $25^\circ\text{C}$  and  $100^\circ\text{C}$  **[4]**
- d) Explain advantages and Limitations of LVDT. **[6]**

OR

- Q2) a)** Define the following terms: **[6]**
- i) Reliability
  - ii) Linearity
  - iii) Hysteresis
  - iv) Drift
- b) Explain the different fundamental standards and units for common physical parameters. **[7]**
- c) Write a short note Load cells. **[7]**

**P.T.O.**

- Q3)** a) Explain general architecture of SMART sensors. [6]
- b) Explain the working of piezoelectric sensors for measurement of accelerometer. [6]
- c) Explain MEMS magnetic field sensors. [4]

OR

- Q4)** a) Explain the working principle of Hall Effect sensors. [6]
- b) Explain Bulk Micromachining technique regarding MEMS. [6]
- c) Draw LM 75 block diagram and give its specification. [4]

- Q5)** a) How data logger is different than DAS? [7]
- b) Explain I to P converter. [6]
- c) Write a short note on RS 232 standards. [5]

OR

- Q6)** a) Explain HART communication protocol. [7]
- b) Explain Data Acquisition system in detailed. [6]
- c) Write a short note on IEEE -488 standard Bus. [5]

- Q7)** a) What are actuators? Give their classification and explain Piston. Actuator in detail. [6]
- b) Explain principle of operation of Stepper motor. State important selection criterion of Stepper motor. [6]
- c) Draw neat diagram of: [4]
- i) Spool valve
- ii) Poppet valve

OR

- Q8)** a) Explain with neat diagram Pressure control valves. [6]
- b) Explain the role of Relays and solenoid valves with any one application. [6]
- c) What are pneumatic actuators? Explain. [4]

