Total No. of Questions :8]

SEAT No. :

P2867

[Total No. of Pages :3

[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 $\alpha = 0.004/°C$. If R = 106 Ω at 20°C, find the resistance at 25°C and 100°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]**