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Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech.(EIE) (2011 & Onwards) (Sem.-6)**  
**INSTRUMENTATION SYSTEM DESIGN**  
Subject Code : EI-302/401  
Paper ID : [A0367]

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTION TO CANDIDATES :**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

**SECTION-A****Q1 Answer briefly :**

- a) List the static characteristics of transducers
- b) Differentiate between accuracy and precision.
- c) Convert the temperature  $700^{\circ}\text{C}$  into Kelvin and Fahrenheit scale.
- d) The range of thermistor is \_\_\_\_\_ to \_\_\_\_\_.
- e) Differentiate between band stop and band pass filter.
- f) The pressure drop of restriction flowmeters is \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ respectively for orifice, venturi and nozzle flowmeters.
- g) List the vacuum type pressure transducers.
- h) State the working principle of thermal flowmeter.
- i) Define power and speed.
- j) What do you understand by modulator?

### SECTION-B

- Q2. Explain design and performance characteristics of transducer.
- Q3. Discuss different types of pressure gauges with suitable diagrams.
- Q4. Describe the construction and working of orifice plate. List its advantages and disadvantages.
- Q5. Design the Butterworth filter for third order.
- Q6. Discuss and design the microprocessor based temperature transducer.

### SECTION-C

- Q7. a) Discuss the construction and working of RTD. Also explain two, three and four lead system. (5)
- b) Explain the construction and working of accelerometer with neat diagram. (5)
- Q8. Discuss the PC based system design for thermal power station. (10)
- Q9. Write short notes on the followings :
- a) 3 stage instrumentation amplifier (5)
- b) Selection criteria for transducer selection. (5)