

**IV B.Tech I Semester Supplementary Examinations, February/March - 2018**  
**INSTRUMENTATION AND CONTROL SYSTEMS**  
**(Mechanical Engineering)**

**Time: 3 hours****Max. Marks: 70***Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B***\*\*\*\*\*****PART-A (22 Marks)**

1. a) Name the different sources of error. [3]
- b) List five properties a material should have to be used as an element for bimetallic strip. [4]
- c) State the basic principle on which strain gauge accelerometer works. [4]
- d) Discuss about Wheat stone bridge circuit. [4]
- e) What are hygroscopic materials? Give examples. [4]
- f) Write the applications of control systems. [3]

**PART-B (3x16 = 48 Marks)**

2. a) Draw the block diagram of generalized measurement system and explain its various elements. [8]
- b) With the help of a neat sketch explain the working of piezo electric transducer and write its advantages and limitations. [8]
3. a) What is a thermistor? With a neat sketch explain how it is used to measure temperature? Write its advantages, limitations and applications. [8]
- b) Explain the working of elastic diaphragm pressure gauge used for the measurement of pressure and write its limitations. [8]
4. a) Explain the construction and working of orifice meter and flow nozzle. [8]
- b) Explain the construction and working of cryogenic fuel level indicator. [8]
5. a) Explain the method of strain measurement by temperature compensation using an adjacent arm compensating gauge. [8]
- b) Explain the process of measuring torque by strain gauges on rotating shaft. [8]
6. a) Explain the working of electrical humidity sensing absorption hygrometer and write its applications and limitations. [8]
- b) Discuss the working of proving ring elastic force meter. [8]
7. a) Explain the effects of feedback on overall gain, sensitivity and distortion. [8]
- b) With the help of a block diagram explain about pressure and temperature control system. [8]