

Code No: RT31034

**R13****SET - 1**

**III B. Tech I Semester Supplementary Examinations, October/November - 2018**  
**INSTRUMENTATION & CONTROL SYSTEMS**  
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. Answering the question in **Part-A** is compulsory  
3. Answer any **THREE** Questions from **Part-B**

**PART -A**

- 1 a) What do you mean by systematic errors? [4M]
- b) List the metals used for resistance thermometers and give their useful temperature ranges. [4M]
- c) Define vibration. List out its harmful effects? [4M]
- d) What are the requirements of materials for strain gauges? [4M]
- e) State the working principle of elastic transducer to measure of force? [3M]
- f) List some of the engineering situations where automatic control systems are used. [3M]

**PART -B**

- 2 a) Explain the working of different parts of Bourdon tube pressure gauge with generalized measuring system block diagram. [8M]
- b) Explain the working principle of Piezoelectric transducer with neat sketch and also list out its limitations. [8M]
- 3 a) Explain the working of the thermistor with neat sketch and also list out its advantages and limitations. [8M]
- b) Explain the working of Thermal conductivity gauge for the measurement of pressure with neat sketch. [8M]
- 4 a) Explain the working principle of operation of hot wire anemometer with neat sketch. [8M]
- b) Explain the construction and working of a vibrating reed tachometer for measuring speed. [8M]
- 5 a) With a neat sketch explain the use of resistance strain gauges for bending, compressive and tensile strain measurements. [8M]
- b) What do you mean by resistance strain gauges? Give a detailed discussion on the subject covering the basic principle, gauge and binding materials and applications of the method. [8M]
- 6 a) Explain the working of Load Cells and give its usages [8M]
- b) How can you detect the moisture content of gases and explain any one method of it [8M]
- 7 a) List out the differences between the Positive and negative feedback systems and open loop and closed loop control systems. [8M]
- b) Describe a typical closed loop control system that can be used to control the temperature of water being heated by steam. [8M]

\*\*\*\*\*

