

Code No: RT31034

R13

SET - 1

**III B. Tech I Semester Supplementary Examinations, May - 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 random errors? [4M]
- b) List out the advantages of thermocouples. [4M]
- c) State the working principle of piezo-electric transducer for the measurement of acceleration. [4M]
- d) List some practical examples where strain measurement becomes essential. [3M]
- e) Explain the working principle of pneumatic load cell for the measurement of force. [4M]
- f) Define the process control system and automatic control systems. [3M]

**PART -B**

- 2 a) Describe the elements present in the generalized measuring system block with the suitable examples. [8M]
- b) Explain the working principle of variable-inductance transducer with a neat sketch and also list out its advantages. [8M]
- 3 a) Explain how pyrometric cones are used for the measurement of temperature. [8M]
- b) Explain with the help of suitable sketches, the difference between a bellows gauge and a diaphragm gauge for pressure measurement. [8M]
- 4 a) Explain the working principle of operation of turbine flow with neat sketch and also list out its advantages and disadvantages. [8M]
- b) Explain the measurement of vibration by the reed vibrometer, and the stroboscope. [8M]
- 5 a) Explain the principle on which the operations of an electrical resistance strain gauge with neat sketch. [8M]
- b) What do you understand by a strain rosette? How is it used? [8M]
- 6 a) Explain the working of sling psychrometer with neat sketch and also list out its limitations in usage. [8M]
- b) Describe the constructional and operation of rope brake type of absorption dynamometer. [8M]
- 7 a) Explain the functions of each component of generalized feedback control system with neat block diagram. [8M]
- b) Suggest a simple control system which automatically turns on a room lamp at dusk and turn it off in day light. Draw the schematics and block diagram of the suggested control system. [8M]

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