

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 psling 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]