

R13

Code No: 117EA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, April/May - 2018

INSTRUMENTATION AND CONTROL SYSTEMS

(Common to ME, AME)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(25 Marks)

- 1.a) What are the various sources of error in measuring instrument? [2]
- b) What are the environmental factors on the design of measuring instruments? [3]
- c) Give the classification of pressure measuring instruments. [2]
- d) What is the need for calibration of measuring instruments? [3]
- e) List out the applications of magnetic level measurement. [2]
- f) Explain the limitations of non-contact type tachometers. [3]
- g) What are the limitations of elastic force meters? [2]
- h) List out various principles used for stress and strain measurement. [3]
- i) Give the classification of control systems. [2]
- j) Explain the applications of servomechanism. [3]

PART-B

(50 Marks)

2. Explain the basic principles of measurement. [10]
- OR**
3. Considering rota meter as an example give the functional description of various elements. [10]
- 4.a) Explain the use of piezo electric transducers for displacement measurement. [5]
 - b) Discuss various principles of temperature measurement. [5]
- OR**
- 5.a) Explain the use of thermal conductivity gauges for pressure measurement.
 - b) Describe the arrangement of thermocouples for the measurement of average temperature of a room. [5+5]
- 6.a) Give the constructional details and explain the working of a cryogenic fuel level indicator.
 - b) Explain the working principle of electrical tachometer. [5+5]

OR

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- 7.a) Explain the applications and limitations of Doppler effect anemometer.
b) Explain the principle of working of vibrometer. [5+5]

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- 8.a) Explain how strain gauges can be used for the measurement of bending stresses?
b) Explain the working of sling psychrometer. [5+5]

OR

9. Discuss in detail the working of various types of dynamometers used for force measurement. [10]

10. With the help of a suitable example explain the use of block diagrams for analyzing the performance of a system. [10]

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- 11.a) Discuss the importance of control systems.
b) Explain the working of temperature control system. [5+5]

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