

R15**Code No: 127EA****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year I Semester Examinations, May/June - 2019****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 basic requirements of any measuring instrument? [2]
- b) What is the influence of temperature on the design of measuring instruments? [3]
- c) Give the classification of temperature measuring instruments. [2]
- d) What are the limitations of diaphragm gauges? [3]
- e) Differentiate between direct and indirect methods of level measurement. [2]
- f) Explain the limitations of mechanical tachometers. [3]
- g) Define gauge factor. [2]
- h) What are the applications of load cells? [3]
- i) Comment about the importance of control systems. [2]
- j) Differentiate between closed and open loop control systems. [3]

PART - B**(50 Marks)**

2. Explain the dynamic performance characteristics of measuring instruments. [10]
- OR**
3. What are the various sources of error in measuring instruments? Suggest and explain the methods to minimize them. [10]
- 4.a) Explain the use of photo electric transducers for displacement measurement.
 - b) Discuss various principles of pressure measurement. [5+5]
- OR**
- 5.a) Explain various arrangements of manometers for pressure measurement.
 - b) Describe the arrangement of thermocouples for low temperature measurement. [5+5]
- 6.a) Give the constructional details and explain the working of a bubbler level indicator.
 - b) Explain the working principle of non-contact type tachometer. [5+5]
- OR**
- 7.a) Explain the applications and limitations of hot-wire anemometer.
 - b) Explain the principle of working of seismic instruments. [5+5]

- 8.a) Derive an equation for gauge factor.
b) Explain the working of absorption psychrometer. [5+5]
- OR**
- 9.a) What are strain gauge rosettes? Explain their applications.
b) Explain the working of torsion meter. [5+5]
10. Describe a servomechanism and explain its working. [10]
- OR**
- 11.a) List out the rules governing the construction of block diagram.
b) Explain the working of position control system. [5+5]

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