

Code No: 57025

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech IV Year I Semester Examinations, November/December - 2016****INSTRUMENTATION AND CONTROL SYSTEMS****(Common to ME, AME)****Time: 3 Hours****Max. Marks: 75****Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) What do you mean by static calibration? give the steps which are necessary in performing a calibration.
- b) Differentiate between the repeatability and reproducibility.
- c) What are the different standard inputs for studying the dynamic response of a system? explain them briefly. [5+5+5]
- 2.a) Briefly explain the various types of working principle of photo electric transducers.
- b) Describe the construction and working principle of optical pyrometer? List out the limitations and advantages. [8+7]
- 3.a) Explain constructional details of McLeod pressure gauge.
- b) List out the advantages and disadvantages of bellows over diaphragm gauges.
- c) Explain the construction, working and theory of thermal conductivity gauges for measurement of vacuum. Explain how radiation effects are minimized. [5+5+5]
4. Explain the working principle of following with suitable examples:
- a) Ultrasonic level b) Cryogenic fuel level indicator
- c) Hot wire anemometer. [5+5+5]
- 5.a) Describe the working principle of D.C. Tachometer generator and what are its advantages and disadvantages.
- b) What are the advantages and disadvantages of centrifugal speed tachometer?
- c) Explain the construction, principle of working and advantages of LVDT accelerometers. [5+5+5]
- 6.a) List the main advantages of semiconductor strain gauges.
- b) Explain one method of temperature compensation using an adjacent arm compensating gauge.
- c) Describe the working principle of strain gauge bridge with neat sketch. Indicate their arrangement for measurement of torque on a circular shaft. [5+5+5]
- 7.a) What are the hygroscopic materials? Explain the working of any one of the absorption hygrometers.
- b) Describe the working principle of hydraulic load cell.
- c) Explain the construction and working of a eddy current brake. What are its advantages and limitations? [5+5+5]
- 8.a) What are the basic elements of control systems? Explain them with neat sketches.
- b) Describe a speed control system for controlling the speed of an IC engine. [8+7]