

2008 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

**III B.TECH SUPPLEMENTARY EXAMINATIONS
INSTRUMENTATION AND CONTROL SYSTEMS
(MECHATRONICS)**

AUG/SEP 2008

**TIME: 3 HOURS
MAX MARKS: 80**

**Answer any FIVE Questions
All Questions carry equal marks**

1. (a) Discuss briefly on the reliability of measurement systems. Explain how reliability improvement can be achieved.
(b) "A precise instrument need not be accurate" explain.
2. (a) Describe the different methods used for measurement of speed; describe their advantages and disadvantages.
(b) Explain the construction, working and theory of a drag cup type tachogenerator.
3. (a) Differentiate between the thermo couples connected in series and parallel.
(b) Distinguish between RTD and thermistors.
4. Describe with diagrams, the construction, working and theory of following types.
(a) Thermocouple gauges
(b) Pirani gauges.
Give their advantages and disadvantages.
5. Enumerate the principle of operation of the following
(a) capacitive level indicator.
(b) ultrasonic level measuring instrument.
6. (a) What are the advantages of piezoelectric type accelerometer?
(b) Name the different vibration sensing systems used in practice. Explain any one such system for the measurement of vibration.
7. (a) Name the different types of strain gauges used in practice and explain how the selection of a strain gauge affect the measurement of strain.
(b) How resistive strain gauges are calibrated?
8. Write short notes on the following:
(a) Servomechanism
(b) Temperature control system
(c) Position control system