



Printed Pages : 3

TIC502

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3096

Roll No.

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## B.Tech

(SEM V) ODD SEMESTER THEORY EXAMINATION 2009-10  
TRANSDUCERS, SENSORS AND DISPLAY SYSTEMS

Time : 3 Hours]

[Total Marks : 100

Note : Attempt all the questions.

- 1 Answer any **four** of the following : 5×4
- (a) What are the basic blocks of a Generalized Instrumentation system ?
  - (b) Explain the phenomenon of hysteresis in measurement systems.
  - (c) Differentiate between the terms "Scale Range" and "Scale Span" giving suitable examples.
  - (d) Define 'passive and active' transducers and give an example of each.
  - (e) Define 'drift', 'threshold value', and 'dead band' of a measuring system and give an example for each.
  - (f) Explain the analog and digital modes of operation of instruments.
- 2 Attempt any **four** parts of the following : 5×4
- (a) Explain the operating principle of an LVDT.
  - (b) What is the advantage of using differential output rather than a single output for measuring displacement ?

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- (c) Derive and plot frequency response of capacitive transducers.
- (d) Explain any one dynamometer for shaft power measurement.
- (e) Discuss frequency response of piezoelectric accelerometer.
- (f) Describe variable Reluctance / FM-oscillator digital systems, briefly.

3 Attempt any **four** of the following :

5×4

- (a) Explain the principle and working of optical pyrometers.
- (b) Describe the construction and working of Radiation thermometers.
- (c) Draw and describe voltage-current and current-time characteristics of thermistors.
- (d) With different temperature range and application environment, enlist, with explanation, various types of temperature transducers.
- (e) Explain the merits of a thermocouple system for the measurement of temperature, when compared with the wire resistance thermometer and the thermistor.
- (f) What is a load cell ? Where is it used ?

4 Attempt any **four** of the following :

5×4

- (a) How many elastic pressure transducers are there ? Explain each of them.
- (b) How many types of manometers are there ?

- (c) Explain with neat diagram, the working of Pirani gauge for pressure measurement.
- (d) Explain liquid vapour display in detail.
- (e) Draw the diagram of electro-phoretic image display and describe its working.
- (f) Describe differential pressure level detector in detail.

5 Attempt any **four** parts of the following :

5×4

- (a) Explain the principle of working and circuit diagram of storage oscilloscope.
- (b) Describe the conductive and capacitive method for the measurement of level.
- (c) Explain ultrasonic level detectors in the measurement of liquid level.
- (d) Differentiate between Hot wire and Hot film anemometer.
- (e) What are the relative advantage of LCD display devices over LED display devices ?
- (f) Describe in brief various gas discharge plasma devices.

