Paper Code: IC-502	**Roll No.**									

B.Tech.
FIFTH SEMESTER EXAMINATION, 2016-17
TRANSDUCERS AND SENSORS

[Time: 3 hrs.] [Max. Marks: 100]

Note- Attempt All questions. All questions carry equal marks.

1. Attempt any *two* parts of the following: - **(10x2=20)**

(a) Explain the analog and digital mode of operation. Explain how the resolution of transducers can be increased.
(b) Explain the general classification of transducers. What are the basic requirements for the selection of transducers?
(c) Explain the following:
  i. Repeatability
  ii. Reproducibility
  iii. Threshold
  iv. Dead Space
  v. Tolerance

2. Attempt any two parts of the following: - **(10x2=20)**

(a) What do you understand by digital displacement transducer?
(b) Describe the mechanical flyball angular velocity sensor. What is its inconvenience and how it is removed?
(c) Explain with neat diagram
  i. Drag cup tachometer.
  ii. Dc tachometer
  iii. Ac tachometer

3. Attempt any two parts of the following: - **(10x2=20)**

(a) Explain with a neat diagram, the different elastic elements used for force measurement along with their working.
(b) Describe all the technique for torque measurement with their working.
(c) Explain the construction, principle and working of LVDT and justify its role as a secondary transducer with an example.

4. Attempt any two parts of the following: - **(10x2=20)**

(a) Using Bernoulli's theorem; obtain the expression for the volume flow rate through a horizontal pipe installed with orifice meter. Also different types of orifice.
(b) Using neat sketches explain :
  i. Turbine meter
  ii. Rotameter
(c) Write short note on the following level measurement:
  i. Float type gauge
  ii. Capacitive method

5. Attempt any two parts of the following: - **(10x2=20)**

(a) Explain the expansion methods of temperature measurement.
(b) Compare and analyze different types of thermistor, thermocouple and RTD.
(c) Write short note on the following temperature measurement:
  i. Infrared image sensing
  ii. Radiation method

ijbnayrp.in