Roll No. | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 09

B.Tech.(ME) (2011 Onwards) (Sem.–5)

MECHANICAL MEASUREMENT AND METROLOGY

Subject Code : BTME-503

Paper ID : [A2130]

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write short notes on :

a) Differentiate between systematic and random errors.

b) What is meant by local interchangeability?

c) Differentiate between the terms “Accuracy” and “precision” with suitable examples.

d) How do you classify measuring instruments? Explain them in brief.

e) What is temperature compensation in strain gauges?

f) What is the order of pressure measured by Ionization Gauge?

g) What do you understand by working standards?

h) Explain the difference between roughness and waviness.

i) What are photo cell transducers?

j) What are angle gauges? How are they used?

SECTION-B

2. Discuss in detail the specifications and measurement of surface roughness by Talysurf technique.

3. What are transducers and how are they classified? Explain their importance in an instrumentation process.

4. Discuss in detail the measurement of tooth thickness, gear profile and pitch of a spur gear.

5. Explain zero, first and second order measuring instruments.

6. What do you understand by line, end and wavelength standards?

SECTION-C

7. (a) Differentiate between mechanical, optical and electrical comparators by giving suitable examples.

   (b) Discuss the construction, working and applications of a rope brake absorption dynamometer with the help of a neat sketch.

8. (a) Explain the working of hydraulic and pneumatic load cells.

   (b) Elaborate the application of strain gauges for the measurement of torque.

9. (a) Explain briefly the principle of hot wire anemometer.

   (b) Differentiate between RTDs and Thermistors.