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 briefly :

a) Discuss the function of a load cell.

b) How does a bimetallic thermometer derive advantage of using two different metals?

c) Discuss the applications of hot wire anemometer.

d) What is the main difference between bonded and unbonded gauges?

e) Which parameters are required to be evaluated while checking the profile of a spur gear?

f) What is cut-off wavelength in surface roughness measurements?

g) What do you mean by error propagation?

h) Explain the difference between zero correction and calibration of an instrument.

i) What are the auxiliary functional elements of a measuring system?

j) Discuss the difference in the terms accuracy and precision of a measuring instrument.

SECTION–B

2. With an example, explain the difference in the primary, secondary and working standards.

3. What is meant by fidelity and dynamic error in instruments? What is the implication of dynamic error and how can they be reduced?

4. For external threads, discuss a method for the measurement of major, minor and effective diameter.

5. What are resistance strain gauges? What is their purpose and underlying principle of use?

6. Explain the construction, principle and working of a dead weight gauge tester.

SECTION–C

7. How is a dynamometer different from a brake? Discuss the main points of difference in absorption and transmission dynamometers. What is a driving dynamometer? Explain.

8. What is the function of pyrometers? Discuss the general principle and working of a total radiation pyrometer.

9. Explain the difference between static and dynamic characteristics of instruments. Explain the meaning of hysteresis, threshold and speed of response.