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

Total No. of Questions : 09

B.Tech.(IE) (ALL) / (ME) (Sem.–5)

MECHANICAL MEASUREMENT AND METROLOGY

Subject Code : ME-307

Paper ID : [A0817]

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

INSTRUCTIONS 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) What is the difference between threshold and resolution?

b) What do you understand by order of a measurement system?

c) What are the working standards?

d) What are systematic errors?

e) List the instruments that can be used for angular measurements.

f) What is a transducer? How is it different than a sensor?

g) What is the purpose of a hot wire anemometer?

h) Write the two laws of thermocouple.

i) What is the advantage of using an inclined tube manometer as compared to U-tube manometer?

j) Write the working principle of a load cell.

SECTION-B

2. With the help of examples explain primary, secondary and tertiary measurements.

3. What is calibration? What is the purpose of calibration? Discuss.

4. What are the various sources of error in a measurement system?

5. State the objectives of flow visualization. Explain some of the methods commonly adopted for flow visualization.

6. What is a dynamometer? Explain the working of a transmission dynamometer.

SECTION-C

7. Explain along with constructional details about the measurement of temperature with resistance thermometer.

8. What is temperature compensation in strain gauges? Why is it needed? Explain.

9. Write short notes on the following :

   i) Use of sine bar for angular measurement.

   ii) Dead weight gauge tester.