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Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech. (Ind. Engg. & Mgt.) (Spl. in TQM) (Sem.-3)**

**MEASUREMENTS AND METROLOGY**

**Subject Code : IEM-303**

**M.Code : 61013**

**Time : 3 Hrs.**

**Max. Marks : 40**

**INSTRUCTIONS TO CANDIDATES :**

1. Attempt All EIGHT questions from SECTION-A carrying TWO marks each.
2. Attempt any SIX questions out of EIGHT from SECTION-B carrying FOUR marks each.

**SECTION-A**

**Q1. Answer briefly :**

- a. Discuss the basic blocks of a generalized measurement system.
- b. State the principle of a micrometer. Sketch an outside micrometer and name its various parts.
- c. What is clinometer? Describe how it can be used for measurement and setting of angles.
- d. Give the working principle of a microscope.
- e. Explain the working of a load cell.
- f. What is global positioning system?
- g. Give the concept of interchangeability.
- h. What is calibration of measuring instruments? Explain with an example.

**SECTION-B**

- Q2
- a. Differentiate between Random error and Systematic error.
  - b. Define the term 'Metrology'. State its significance in modern industries.
- Q3
- Describe in brief the construction and working of an optical comparator with a neat sketch.
- Q4
- Describe with neat sketches two - wire method of measuring the effective diameter of screw threads.

- Q5 Describe with neat sketch construction and working of an instrument used for measurement of surface texture.
- Q6 Describe the construction and working of a Bourdon tube. Describe the C-type and spiral type Bourdon tube with a neat sketch.
- Q7 Describe the measurement of :
- Electrical resistance
  - Humidity
- Q8 Explain with one example of each :
- Clearance fit
  - Transition fit
  - Interference fit
- Q9 Why is international acceptability of test results important? Give reasons in support of your answer.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**