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CBCS SCHEME

17AU35

Third Semester B.E. Degree Examination, July/August 2021
Mechanical Measurements and Metrology

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions.*

1   a. What is Measurement? Brief the significance of the measurements. **(05 Marks)**
    b. Explain the concept of Accuracy and Precision with a suitable example. **(05 Marks)**
    c. Differentiate the Line standard with End standards. **(05 Marks)**
    d. A bar has to be calibrate having an actual length of 800.0006mm. It is used in the calibrate on two bars A and B, each having the length of 400mm. When compared with the bar the length of A and B bars was found to be shorter by 0.0003mm. In comparing the bar A was bound 0.0005mm longer than B. Find the actual length of A and B. **(05 Marks)**

2   a. Define the following : i) Sensitivity ii) Calibration iii) Threshold iv) Hysteresis v) Error. **(10 Marks)**
    b. With a neat sketch, explain the International Prototype meter. **(10 Marks)**

3   a. List the important characteristics of a Comparator. **(05 Marks)**
    b. With a neat sketch, explain the working of any one type of Mechanical Comparator. **(10 Marks)**
    c. Write a note on Angle gauges. **(05 Marks)**

4   a. Explain the principal of LVDT used in Electrical comparator. **(10 Marks)**
    b. With a neat sketch, explain the working of an Solex Pneumatic Comparator. **(10 Marks)**

5   a. Explain the Primary and Secondary transducers. **(05 Marks)**
    b. Explain the mechanical type pressure sensitive elements. **(10 Marks)**
    c. List the advantages of Electrical transducers. **(05 Marks)**

6   a. With a neat sketch, explain the working of a Clinometer. **(10 Marks)**
    b. Explain the principles of Auto collimator. **(05 Marks)**
    c. Write a note on Optical flats. **(05 Marks)**

7   a. With a neat sketch, explain the platform balance. **(10 Marks)**
    b. Explain the working of an X – Y plotters with a sketch. **(10 Marks)**

8   a. Write a note on the following : i) Ultra – Violet recorder ii) Servo recorder. **(10 Marks)**
    b. With a neat sketch, explain the Prony brake dynamometer. **(10 Marks)**

9   a. Explain the Hole basis and Shaft basis system. **(05 Marks)**
    b. What is the meaning of Geometric tolerance and Position tolerance? **(05 Marks)**
    c. With a neat sketch, explain the Optical pyrometer. **(10 Marks)**

10 Explain the following with respect to Strain measurements :
    a. Strain gauge   b. Gauge factor   c. Mounting of strain gauges
    d. Strain gauge materials   e. Methods of strain measurements. **(20 Marks)**

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