CBCS Scheme

USN ☐☐☐☐☐☐☐☐☐☐ 15AU35

Third Semester B.E. Degree Examination, Dec.2017/Jan.2018
Mechanical Measurements and Metrology

Time: 3 hrs. Max. Marks: 80

Note: *Answer FIVE full questions, choosing one full question from each module.*

Module-1

1   a. Explain the significance of Measurement. (04 Marks)
    b. Define the following : i) Sensitivity ii) Threshold   iii) Hysteresis iv) Error. (08 Marks)
    c. List the objectives of Metrology. (04 Marks)

OR

2   a. With a neat sketch, explain the Imperial standard yard. (08 Marks)
    b. A calibrated metre end bar has an actual length of 1000.0005mm, used to calibrate the two end bars of A & B , having a basic length of 500 mm each. When calibrated with a metre bar with A & B bars was found to be shorter by 0.003mm. In comparing 'A' with 'B' , it was found that 'A' was 0.0006mm longer than 'B'. Find the actual length of A & B bars. (08 Marks)

Module-2

3   a. List the characteristics of a comparator. (04 Marks)
    b. With a neat sketch, explain the working of a optical comparator. (08 Marks)
    c. List the unique features of LVDT. (04 Marks)

OR

4   a. With a neat sketch, explain the use of sine centre. (08 Marks)
    b. What are Angle gauges? How they are used? Build the angle of 57^0 4' 18″. (08 Marks)

Module-3

5   a. With a sketch, explain the primary and secondary transducers. (08 Marks)
    b. What are the advantages of Electrical / Electronic transducers? (04 Marks)
    c. List the inherent problems of Mechanical transducers. (04 Marks)

OR

6   a. With a neat sketch, explain the working of a Clinometer. (08 Marks)
    b. Illustrate the principle of interferometry with neat sketches. (08 Marks)

Module-4

7   a. With a neat sketch, explain the working of a platform balance. (08 Marks)
    b. Explain the Hydraulic dynamometer used as a Torque measuring device. (08 Marks)

OR

8   a. With a neat sketch, explain the constructional part of a Cathode Ray Oscilloscope. (08 Marks)
    b. Write a note on : i) Oscillograph   ii) X − Y plotters. (08 Marks)

Module-5

9   a. Explain the following : i) Unilateral tolerances   ii) Bilateral tolerances   iii) Upper deviation   iv) Lower deviation. (08 Marks)
    b. With a neat sketch, show the types of fit with Hule basis and Shaft basis system. (08 Marks)

OR

10 a. Explain the preparation and mounting of strain gauges. (04 Marks)
    b. Explain the Laws of Thermocouple. (04 Marks)
    c. With a neat sketch, explain the working of Optical pyrometer. (08 Marks)

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