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 Oscillescope. **(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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