CBCS SCHEME

USN | | | | | | | | | | |

15AU35

Third Semester B.E. Degree Examination, June/July 2018
Mechanical Measurements and Metrology

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. What is metrology? State and explain the objectives of metrology. **(06 Marks)**

b. With a sketch, explain any one type of material length standard. **(06 Marks)**

c. What is measurement? What is the significance of measurements system? **(04 Marks)**

OR

2 a. What is error? Explain the error in measuring instruments. **(04 Marks)**

b. Explain the following:
i) Sensitivity
ii) Accuracy and precision
iii) Repeatability
iv) Calibration. **(04 Marks)**

c. Using M112 set of slip gauges build the following dimensions i) 49.3115 and ii) 68.208. **(08 Marks)**

Module-2

3 a. What is a comparator? What is the need for a comparator? **(04 Marks)**

b. Explain with an example any one mechanical comparators. **(06 Marks)**

c. Explain the principle of Sine Bar. **(06 Marks)**

OR

4 a. Explain with a sketch, the working of a solex pneumatic comparators. **(06 Marks)**

b. Explain with a neat sketch the construction and working principle of LVDT. **(06 Marks)**

c. Select the size of angle gauge required to build i) 37° 9′ 18″ ii) 102° 8′ 42″ **(04 Marks)**

Module-3

5 a. Explain the three stages of generalized measuring method using any one example. **(06 Marks)**

b. With a sketch explain an electro kinetic transducer. **(06 Marks)**

c. Distinguish between active and passive transducer with example. **(04 Marks)**

OR

6 a. With a sketch explain piezoelectric transducer. **(06 Marks)**

b. Explain the principle of auto collimators. **(06 Marks)**

c. Explain any one type of mechanical pressure sensitive elements. **(04 Marks)**

Module-4

7 a. Explain with a sketch working of proving ring. **(06 Marks)**

b. Explain with a sketch working of Prony Brake. **(06 Marks)**

c. What is dynamometer? List all the types of dynamometers. **(04 Marks)**

OR

8 a. With a sketch explain the construction and working of CRO. **(08 Marks)**

b. With a sketch explain the construction and working of X-Y plotters. **(08 Marks)**

Module-5

9 a. Define following terms: i) Limits ii) Tolerance. **(02 Marks)**

b. Discuss hole basis and shaft built system. **(08 Marks)**

c. Explain the following showing the designation of each: i) Clearance fit ii) Interference fit iii) Transition fit. **(06 Marks)**

OR

10 a. What is a thermocouple? Explain the principle on which it works. **(06 Marks)**

b. Describe the construction and working of optical pyrometer. **(08 Marks)**

c. Explain see beck effect. **(02 Marks)**

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