CBCS Scheme

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15MEB306/15ME36B

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

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. With neat sketches, explain the material length standards. **(08 Marks)**

b. Mention the methods of measurement with suitable example to each method. **(08 Marks)**

OR

2 a. Using M112 slip gauge set build the following dimensions with minimum number of slip gauges:
(i) 49.3115 (ii) 78.3665 **(08 Marks)**

b. Explain with a neat sketch working principle of sine bar and mention its limitation. **(08 Marks)**

Module-2

3 a. Distinguish between interchangeab lity and selective assembly. **(06 Marks)**

b. How are plain gauges classified? **(04 Marks)**

c. State and explain Taylor's principle of gauge design. **(06 Marks)**

OR

4 a. Mention the functional requirements of comparators. **(06 Marks)**

b. With a neat sketch, explain the construction and working of Johanson's Mikrokator. **(10 Marks)**

Module-3

5 a. With a neat sketch of a screw thread mention the screw thread parameters and define each one of them. **(08 Marks)**

b. Give the applications of Toolmaker's microscope and with neat sketch show its principal parts. **(08 Marks)**

OR

6 a. Define the following Gear teeth Terminology:
(i) Pitch circle diameter.
(ii) Pressure angle.
(iii) Addendum.
(iv) Dedendum.
(v) Module.
(vi) Diametral pitch.
(vii) Involute.
(viii) Circular pitch. **(08 Marks)**

b. Give the application of CMM and explain the working principle and construction of CMM. **(08 Marks)**

Module-4

7 a. Define the following terms:
(i) Calibration
(ii) Repeatability
(iii) Accuracy
(iv) Precision
(v) Reproduceability
(vi) Linearity
(vii) System response
(viii) Sensitivity **(08 Marks)**

b. Explain any two types of electrical transducers. **(08 Marks)**

OR

8 a. Explain electronic amplifier with a neat sketch. **(08 Marks)**

b. With a neat sketch, explain the principle and working of stylus type oscillograph. **(08 Marks)**

Module-5

9 a. Explain with a neat sketch unequal arm balance. **(08 Marks)**

b. With a neat sketch, explain the principle and working of pirani gauge. **(08 Marks)**

OR

10 a. What is a thermo couple? Explain the working principle of a thermocouple with a neat sketch. **(08 Marks)**

b. Define gauge factor of a strain gauge and explain with a neat sketch measurement of strain using wheat stone bridge circuit. **(08 Marks)**

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