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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 interchangeability 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)
