Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

ME-5005 (2) (CBGS)

B.E. V Semester

Examination, November 2018

Choice Based Grading System (CBGS)

Metrology and Inspection

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Describe the significance of measurements. Also explain statistical concept in metrology. 7
   b) Derive the expression for relative limiting error. 7

2. a) Discuss the following: 7
      i) Observational error
      ii) Environmental error
   b) Suppose we have two variables x and y. Explain how method of least squares can be used to find the best linear function connecting y with x. 7

3. a) Define the following term. 7
      i) Limits ii) Tolerance
      iii) M.M.L. iv) L.M.L.
   b) Differentiate between 'Hole basis system' and 'Shaft basis system' of fits. 7

4. a) How will you classify temperature measuring devices? 7
   b) Explain effects of pitch errors on the effective diameter of a screw thread. 7

5. a) Calculate the setting for a straight spur gear having 40 teeth of module 3 pitches. Name the errors in gears. 7
   b) Explain the method used for checking pitch of gear. Also discuss one method of inspecting gear. 7

6. a) What are interferometers? What are their advantage over optical flats? 7
   b) Explain why monochromatic light is used for interferometry work and not the white light. 7

7. a) State the principle of working of : 7
      i) Mechanical comparator
      ii) Optical comparator
   b) Describe the essential characteristics of comparator. Explain the fundamental requirement of comparator. 7

8. Write short notes: 14
      i) CNC system
      ii) 3D Metrology
      iii) Gauge length interferometer
      iv) Screw thread measurement

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