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ME-5005 (2) (CBGS)**B.E. V Semester**

Examination, December 2017

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) What is actually understand by measurement? What are the fundamental methods of measurement? 7
b) What do you understand by systematic errors and random errors? Explain. 7
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2. a) Sketch a micrometer and explain its working. 7
b) Describe two methods of testing the parallelism of micrometer measuring faces and also discuss the limitations of each method. 7
3. a) Discuss several types of tolerances. 7
b) What do you understand by the term hole basis and shaft basis in terms of assembly fit specifications? Which is preferred? Give reason supporting your answer. 7

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4. a) Explain Taylor's principle of limit gauging. 7
b) How will you measure the major diameter of 7
i) External threads
ii) Internal threads
5. a) What is mean by 'Lay'? Enumerate the various types of Lay and give the symbol for each. 7
b) What are the effects of surface roughness on the functional properties of machine parts? 7
6. a) Describe a method for inspecting the involute profile of a spur gear tooth. **rgpvonline.com** 7
b) Calculate the dimension of the maximum chord over four teeth when the gear under inspection has the No. of teeth = 32, Module = 4, Pressure angle 20° Shift of the tool in to gear to provide backlash = 0.25mm. 7
7. a) Describe the working principle of pneumatic comparator. 7
b) Discuss the merits and demerits of optical comparator. 7
8. Write short notes on any three of the following: 14
a) 3D metrology
b) Interchangeability
c) Selective assembly
d) Interference pattern

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