Code No: **R32031** **R10** **Set No. 1**

III B.Tech II Semester Supplementary Examinations, November - 2017

METROLOGY

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1 a) Explain clearly what is meant by selective assembly, when it is used and how does it differs from interchangeable assembly? [8M]

b) Explain the different types of fits used in engineering practice with neat sketches [7M]

2 a) Explain with the help of a diagram the principle of working of a sine bar for angular measurement. List the advantages and limitations of sine bar. [8M]

b) State and explain the "Taylor's principle of gauge design'. Explain the following in connection with gauge design: (i) Gauge maker's tolerance (ii) Wear allowance. [7M]

3 a) Explain with a neat sketch, principle and working of NPL flatness interferometer. [8M]

b) Explain and illustrate two simple tests on an optical flat which will reveal whether a surface is convex or concave with a neat sketch. [7M]

4 a) Explain with a neat sketch, the principle and working of Taylor Hobson Taly surf surface roughness tester for the measurement of surface finish. [8M]

b) Discuss the following terms in connection with surface finish measurement **i**) Crestline method **ii**) R.M.S **iii**) Ten-point height of irregularities [7M]

5 a) Explain with a neat sketch construction and working of the solex pneumatic comparator. [8M]

b) With the help of neat sketch explain the working principle of a reed type mechanical comparator [7M]

6 a) With a neat sketch explain about checking involute shape of gear. [8M]

b) Describe with the help of a neat sketch the working principle of Gear tooth Vernier caliper. [7M]

7 a) Describe with neat sketches two wire method of measuring the effective diameter of a screw threads. [8M]

b) Explain the errors in screw threads with neat diagrams. [7M]

8 a) With a neat sketch explain the procedure to check the alignment of both centres of a lathe machine in vertical plane [8M]

b) Briefly describe the various alignment tests that can be performed on a Drilling Machine [7M]

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