

Code No: RT31036

**R13****SET - 1****III B. Tech I Semester Supplementary Examinations, May- 2016****METROLOGY**

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. Answering the question in **Part-A** is compulsory  
3. Answer any **THREE** Questions from **Part-B**

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**PART -A**

- 1 a) Write the differences between the unilateral and bilateral system. [3M]
- b) State the principle of micrometer and its least count. [3M]
- c) State the principle of interference. [3M]
- d) Define the terms roughness, waviness, lay, flaws and roughness width. [5M]
- e) Calculate the setting of gear tooth Vernier to inspect a gear having 35 teeth and module 5mm. [4M]
- f) List out different alignment tests for lathe. [4M]

**PART -B**

- 2 a) Explain briefly different types of fits with necessary sketches. [8M]
- b) Explain briefly about interchangeable manufacturing and selective assembly. [8M]
- 3 a) Explain the construction and use of Vernier bevel protractor with a neat sketch. [8M]
- b) Explain the following in connection with gauge design: [8M]
  - (i) Gauge tolerance
  - (ii) Wear allowance.
- 4 a) Explain briefly about optical projector with a neat sketch. [8M]
- b) List the different types of Interferometers and explain about Michelson Interferometer. [8M]
- 5 a) Name and describe the various numerical methods of assessment of surface Finish. [8M]
- b) Compare between electrical comparator and mechanical comparator. [8M]
- 6 a) Explain measuring the gear tooth thickness using chordal thickness method. [8M]
- b) Describe with neat sketches two wire method of measuring the effective diameter of a screw threads. [8M]
- 7 a) Explain with the help of neat sketch the principle and construction of an auto collimator. [8M]
- b) What is meant by alignment tests on machine tools? Why they are necessary? Explain. [8M]

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