

Code No: PT32031/R13

RA**SET - 1****III B. Tech II Semester Regular/ Supplementary Examinations, April - 2018****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 compulsory3. Answer any **THREE** Questions from **Part-B**

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**PART -A**

- 1 a) Write about interchangeability? [3M]
- b) Write the importance of profile and position gauges. [4M]
- c) What are the applications of interferometer? [4M]
- d) What are the various factors influencing surface finish? [4M]
- e) What are the different elements of a screw thread? [3M]
- f) What is meant by an alignment test on machine tools? [4M]

**PART -B**

- 2 a) Describe about nominal size, limits and deviations? [8M]
- b) Explain International standard system of tolerances? [8M]
- 3 a) Explain the manufacturing method for slip gauges and how they calibrated? [8M]
- b) List various angle measurement instruments. Describe the working principle of Bevel protractor? [8M]
- 4 a) Describe the working principle and applications of optical projector and optical flats [8M]
- b) Explain about NPL gauge interferometer with neat diagram? [8M]
- 5 a) How are  $R_a$  and RMS values of surface finish of a surface assessed? Explain with diagrams? [6M]
- b) What are the salient features of a pneumatic comparator? Describe pneumatic comparator with a neat sketch and write its uses? [10M]
- 6 a) Discuss various types of errors in Gear measurement? [8M]
- b) Derive an equation for effective diameter of a screw thread? [8M]
- 7 a) Describe the measurement of flatness of surfaces using surface plates? [8M]
- b) Explain the alignment test for drilling machine. [8M]

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