Code No: R1632031 **R16** SET - 1

III B. Tech II Semester Supplementary Examinations, November - 2019

METROLOGY

(Mechanical Engineering)

Time: 3 hours Max. Marks: 70

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

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PART –A (14 Marks)

1. a) What is interchangeability? [2M]
   b) List out the Linear measurement instruments. [2M]
   c) Write the applications of Tool Maker's Microscope. [2M]
   d) Describe the classification of Comparators. [3M]
   e) What is the principle of involute profile measurement? [3M]
   f) What is the need of Alignment tests? [2M]

PART –B (56 Marks)

2. a) In a limit system, the following limits are specified to give a clearance fit between a shaft and hole [8M]

   $Shaft\ 50^{-0.006}_{-0.020}\ mm \qquad Hole\ 50^{+0.030}_{-0.000}\ mm$

   Find basic size, shaft and hole tolerances, maximum clearance and minimum clearance.
   b) Briefly explain the need to specify tolerance on components. [6M]

3. a) State and explain "GO" gauge and "NO GO" gauge. [7M]
   b) Explain the construction and working of an angle dekkor with a neat sketch. [7M]

4. a) Explain with neat sketches Michelson's Interferometer. [7M]
   b) Explain with a neat sketch the principle of Optical projector. [7M]

5. a) Write the advantages and disadvantages of Mechanical Comparators. [7M]
   b) Describe the basic principle of a pneumatic comparator with a neat sketch. [7M]

6. a) Describe with a neat sketch the two-wire method of measuring the effective diameter of screw threads. [7M]
   b) Write a short notes on: (i) Thread Profile Gauge, (ii) Angle of thread. [7M]

7. a) Write short notes on: (i) straight edges, (ii) surface plates. [7M]
   b) Discus any two alignment tests carried out on Lathe machine. [7M]

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