

III B. Tech II Semester Regular/Supplementary Examinations, October/November - 2020
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) Write a short note on the bilateral tolerance system. [2M]
- b) Draw the schematic layout of the sine bar and indicate the important elements. [2M]
- c) List out different optical measuring instruments. [2M]
- d) Define the terms roughness, waviness, and lay. [3M]
- e) Describe the various errors in screw threads. [3M]
- f) Write a short note on straight edges. [2M]

PART -B

(56 Marks)

2. a) With the help of neat sketches explain the hole basis system and shaft basis system. [8M]
- b) Discuss the International standard system of tolerances. [6M]
3. a) Explain the calibration procedure of the slip gauges. [7M]
- b) Explain the construction and working of a dial indicator. [7M]
4. a) Explain the working principle of Michelson's interferometer. Write its applications. [7M]
- 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]
5. a) What is surface roughness? Explain any two methods to find out surface roughness. [7M]
- b) What is a comparator? Explain the working of an electrical comparator and write its applications. [7M]
6. a) Explain the following gear measurement methods: [8M]
i) Constant chord method. ii) Base tangent method.
- b) Discuss how screw thread pitch can be measured by using Tool Makers Microscope? [6M]
7. a) Describe the procedure for flatness measurement. [7M]
- b) Explain the alignment test procedures for the lathe machine. [7M]
