

## III B. Tech II Semester Supplementary Examinations, April - 2021

**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**

**PART - A****(14 Marks)**

1. a) A shaft of 25 mm basic size is given as  $25 \pm 0.02$  mm. Find the tolerance. [2M]
- b) List out the uses of dial indicators. [2M]
- c) What are the uses of Optical flat? [2M]
- d) Draw the ISI symbols for indication of surface finish. [3M]
- e) How to use gear tooth vernier caliper? [3M]
- f) Define flatness of surface. [2M]

**PART - B****(56 Marks)**

2. a) Write short notes on Unilateral and Bilateral Tolerance system. [7M]
- b) Explain Hole basis and Shaft basis system. [7M]
3. a) State and explain "Taylor's Principle of Gauge Design". [7M]
- b) How to measure the distance between two ends by using slip gauges? Explain. [7M]
4. a) Explain the construction and working of tool maker's microscope with a neat sketch. [7M]
- b) Describe clearly what is meant by interference of light? How does the nature of light source affect interference phenomenon? Explain. [7M]
5. a) What are advantages and disadvantages of Electrical Comparators? [7M]
- b) What are the methods to measure Surface finish? Explain RMS method and CLA method. [7M]
6. a) What is "best size wire"? Derive the expression for the same in terms of the pitch and angle of the thread. [7M]
- b) Name the various types of errors found in gear. State their causes. [7M]
7. Define machine tool? Write the procedure for the Alignment test on Lathe machine with a neat sketch. [14M]

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