Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech.(PE) (Sem.–3)

METROLOGY & INDUSTRIAL INSPECTION

Subject Code : PE-521

M.Code : 39020

Date of Examination: 12-12-2022

Time : 3 Hrs. **Max. Marks : 100**

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. a) Distinguish between Line standard, End standard and Wavelength standard. Give their advantages.

   b) Discuss the construction, working, applications, advantages and disadvantages of sine bars giving a neat sketch.

2. a) Explain the use of slip gauges in the measurement of anlogs. In this content, explain the procedure and working principle involved.

   b) The following limits are specified in a limit system, to give a clearance fit between a hole and a shaft. Determine the following : i) Basic-size, ii) Tolerances on shaft and hole, c) Maximum and minimum clearances

   $+0.03 \qquad -0.006$

   Hole = $25^{-0.00}$ mm and shaft = $25^{-0.020}$ mm

3. a) With the help of an illustration, explain the following terms: roughness, waviness, lay, and flaws.

   b) Explain the working of Dr.Tomilson's surface meter with suitable sketch.

4. a) How is the interferometry technique useful for measurement of surface irregularities?

   b) Describe the procedure of checking flatness using optical flat.

5. a) What is the principle of interferometer? What do interferometers measure?

   b) Give classification of comparators. Explain the working principle of optical comparator.

6. a) How will you measure major diameter, minor diameter and effective diameter of an external thread?

   b) Explain the process of measurement of tooth thickness by gear tooth vernier caliper using chordal thickness method.

7. a) Explain the procedure for gear profile measurement using special profile-measuring instrument giving a neat sketch.

   b) Explain the constructional details, underlying principle, working procedure and applications of screw thread micrometer.

8. a) Explain construction and working of Autocollimator with a neat diagram.

   b) "*Communication of specifications must be done in an effective manner*". Comment.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.