

Max. Marks: 80

Duration: 3 Hrs

N.B. : 1. Q. 1 is compulsory.

2. Solve any **three** from the remaining questions.
3. All question carry equal marks.

Q1 Answer Any Four Questions

20

- a) What do you mean by sampling? Explain its advantages.
- b) Differentiate between precision and accuracy.
- c) Write a note on Nano metrology.
- d) Write a note on quality tools.
- e) In a limit system, the following limits are specified for a hole and shaft assembly:

$$\begin{aligned} &+ 0.02 \\ \text{Hole} &= 50^{+ 0.00} \\ &- 0.05 \\ \text{Shaft} &= 50 - 0.08 \end{aligned}$$

Determine the (i) tolerance and (ii) allowance with clear explanation.

Q2

- a) Explain Gear terminologies and gear errors in detail with diagrams. **10**
- b) What is Mechanical comparator? Explain Electrical/Electronic comparator in detail with advantages, applications and limitations. **10**

Q3

- a) What is Interferometry? Explain Laser Interferometer with diagram in detail. **10**
- b) Explain method of major diameter measurement of internal threads. **10**
Also explain minor diameter measurement of internal threads using
i. Taper Parallel and
ii. Rollers.

Q4

- a) Enlist various methods for effective diameter measurement of screw thread also derive expression for best wire size. **10**
- b) Write classification of gauges and explain Taylors Principle of gauge design. **10**

Q5

- a) Explain construction and working of Autocollimator with neat diagram. **10**
- b) Explain various SQC tools in detail and write a note on its applications in engineering. **10**

Q6 Answer Any FOUR Questions

20

- a) Explain various surface roughness symbols with neat diagram.
- b) Write a note on Eddy Current testing methods.
- c) Write a note c-chart and u-chart.
- d) What is CMM? Explain its various types.
- e) Explain role of computers in metrology with suitable examples.
