T.E. (Mechanical) (Sem-VI) (CBJ) Date-03/12/19

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:

$$\text{Hole} = 50^{+0.02}_{+0.00}$$

$$\text{Shaft} = 50^{-0.05}_{-0.08}$$

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.

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