

- xiii) List the factors affecting surface finish.
- xiv) Compare a vernier calliper with a micrometer.
- xv) Enlist various types of thread gauges commonly used.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Explain any two of the following elements of a screw thread:-
- a) Major diameter b) Thickness of thread
 - c) Crest d) Helix angle
- Q.4 a) Name the various forms of gear teeth.
b) Write the advantages and disadvantages of involute gears.
- Q.5 Enumerate various types of micrometers and sketch an outside micrometer and name its parts.
- Q.6 Explain with a neat sketch how a sine bar is used to check small components that may be mounted on it.
- Q.7 Explain the wedge method to measure straightness.

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3rd Sem. / Mech Engg. (CAD/CAM)

Subject : Metrology

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1 a) Write down the least count of a micrometer.
b) Which type of gauge is normally used for measuring clearance between components.
c) Which device is used to check the concentric running of the shaft.
d) State the principle on which a pneumatic comparator works.
e) Which of the following ensure the constant measuring pressure in a micrometer. Ratchet, locknut, spindle or thimble.
f) For measuring____ a sine bar is used. Select from the following. (External tapers or internal tapers or gear profile or surface roughness.
g) The sine bar should not be used for angles more than_____.

- h) Name any two types of clinometer available.
 - i) How is a sine bar specified?
 - j) In double threaded screw, state the relation between lead and pitch.
 - k) What is a clinometer?
 - l) Name any four characteristics that you would measure in a screw thread.
 - m) Seratch method is suitable for measuring surface finish on _____ materials.
 - n) _____ is the difference between dedendum and addendum.
 - o) Define dedendum.
 - p) Which type of gears are used for transmitting motion between two parallel shafts.
 - q) Write any two components / instruments used to check squareness.
 - r) Which form of teeth are normally there on a spur gear.
- ii) Differentiate between precision and accuracy.
 - iii) Dial indicator is a simplest type of _____ comparator.
 - iv) List the instruments / apparatus that are required for measuring the following characteristics of a screw thread:-
 - a) Major diameter.
 - b) Pitch.
 - v) The divisions on the main scale of a vernier calliper are 0.5 mm apart. The vernier has 100 divisions equal in length to 98 main scale divisions. Find its least count.
 - vi) Why micrometer is required to be tested for accuracy.
 - vii) What is wringing? Explain the procedure for wringing of slip gauges.
 - viii) Enlist various instruments used for angle measurements.
 - ix) Explain the principle of sine bar.
 - x) Name different types of commonly used clinometers.
 - xi) State the difference between addendum and dedendum.
 - xii) Define squareness and enlist various devices used to measure squareness.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2 i) Define metrology.

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