

# 22450

**12425**

**03 Hours / 70 Marks**

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answer with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

- 1. Attempt any FIVE of the following: **10****
- a) State the need of inspection.
  - b) Define sensitivity and calibration.
  - c) Define fit. List its types.
  - d) List the instruments used to measure gear tooth thickness.
  - e) State the names of instruments used for linear measurement.
  - f) Draw and label the symbol of surface finish designating on drawing.
  - g) Define quality control.

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- 2. Attempt any THREE of the following:** **12**
- a) Describe the concept of least count of measuring instrument with suitable example.
  - b) State the requirements of good comparator.
  - c) Compare mechanical comparator and pneumatic comparator.
  - d) Discuss the Taylor's principle of gauge design.
- 3. Attempt any THREE of the following:** **12**
- a) Describe the interchangeability with its importance.
  - b) Compare limits and tolerance.
  - c) Draw a neat sketch of floating carriage micrometer.
  - d) Describe Parkinson's gear tester with neat sketch.
- 4. Attempt any THREE of the following:** **12**
- a) Explain analytical and functional inspections of gear.
  - b) Illustrate screw thread terminology with labels.
  - c) Describe the working of universal bevel protractor.
  - d) An angle of  $114^{\circ} 28' 36''$  is to be developed using angle gauge set of  $[1^{\circ}, 3^{\circ}, 9^{\circ}, 27^{\circ}, 41^{\circ}]$   $[1', 3', 9', 27']$   $[3'', 6'', 18'', 30'']$  and a right angle (square block). Sketch the arrangement.
  - e) With reference to surface finish measurement, define the following terms:
    - i) Primary texture,
    - ii) Secondary texture,
    - iii) Sampling length,
    - iv) CLA value.

**5. Attempt any TWO of the following:****12**

- a) With the help of neat sketches, illustrate procedure to carry out any two alignment tests on Lathe machine.
- b) Explain the principle of stylus probe type direct instrument measurement of surface finish.
- c) Write advantage and limitations of ISO 9000 implementation.

**6. Attempt any TWO of the following:****12**

- a) Sketch ideal and actual o.c. curve showing all parameters on it and define them.
  - b) Compare single, double and multiple sampling plan.
  - c) Define:
    - i) Process capability
    - ii) Process capability index  $C_p$and describe stepwise procedure to calculate  $C_p$ .
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