

III B.Tech II Semester Regular Examinations, Apr/May 2008
METROLOGY AND SURFACE ENGINEERING
(Mechanical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. With reference to the metrology, define and distinguish between the terms.
 - (a) Precision and Accuracy
 - (b) Repeatability and Reproducibility
 - (c) Nominal size and allowance
 - (d) Tolerance limits and Control limits. [4+4+4+4]
2. (a) What do you understand by a marking “1 Div = 0.005 mm in 100mm” found on a precision spirit level. Also describe how the accuracy of the graduations on a spirit level can be checked.
(b) Derive an expression for displacement of bubble in terms of radius of curvature, base length of level and displacement height. [8+8]
3. (a) What are the necessary conditions for interference of light waves?
(b) At what angle the bands should be viewed in interferometric measurement and what is the effect if it is too large? [8+8]
4. The heights of peaks and valleys of 20 successive points on a surface are 45, 25, 23, 22, 24, 53, 15, 22, 64, 32, 63, 12, 23, 34, 55, 23, 11, 12, 17, 15 microns respectively, measured over a length 20 mm. Determine CLA and RMS values of roughness surface. [16]
5. (a) What are the different elements of a screw thread? What are the instruments used for the measurement of the elements of the screw thread.
(b) Can you apply Taylor’s principle of limit gauging to gauging of screw threads? If so, how? [8+8]
6. Explain with neat sketch the method of checking the following in the acceptability test of drilling machine.
 - (a) If the spindle is running true
 - (b) If the table and pillar are mutually perpendicular
 - (c) If the spindle perpendicular to the table. [4+6+6]
7. (a) Describe ‘Three Coordinate Measuring Machine CMM.
(b) Discuss various applications of Coordinate Measuring Machine (CMM). [8+8]
8. Describe in detail about the following surface coating processes.

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Set No. 3

(a) Sheradizing

(b) Colorizing.

Give their applications.

[8+8]

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