Reg.No.: | | | | | | | | | | | |

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2013

Fourth Semester

Manufacturing Engineering

MF 9252 –ENGINEERING METROLOGY

(Regulation 2008)

(16)

Time: Three hours Maximum: 100 Marks

Answer ALL questions

PART A – (10 x 2 = 20 marks)

1. Define 'Sensitivity'.
2. Write short notes on wave standards.
3. What are advantages of mechanical comparators?
4. What are the limitations of sine bars?
5. Define 'Effective' diameter of a screw thread.
6. What are the drawbacks of using stylus and skid type roughness measuring devices for roughness measurement?
7. What are the conditions necessary for producing interference?
8. Name few laser sources used in laser instruments?
9. What are the benefits of a CNC CMM?
10. Mention any 4 advantages of computer aided inspection.

PART B – (5 x 16 = 80 marks)

11. a.i. Distinguish between Precision and Accuracy. (6)
    ii. Explain the care and precautionary measures to be taken in handling measuring instruments. (10)

12. a.i. Describe the principle, construction and working of a Solex pneumatical comparator with a neat sketch. (10)
    ii. Explain the advantages and disadvantages of electronic comparators. (6)

    (OR)

    b.i. Explain the design and applications of special purpose limit gauges. (10)
    ii. Explain the construction and working of an angle dekkor. (6)

13.a.i. Explain 4 types of pitch errors with neat diagrams. (8)

ii. Explain the chordal thickness method of checking gear tooth thickness with a neat sketch. (8)

(OR)

b.i. Discuss the factors affecting surface generation. (6)

ii. Explain the construction and working of a trace type profilogram with suitable sketches. (10)

14.a.i. Explain the principle of interference. (6)

ii. Explain the construction and working of Tyman Green's interferometer with a neat sketch. (10)

(OR)

b. Explain the construction and working of Hetrodyne laser interferometer with a neat sketch. (16)

15.a. Describe the design features of various configurations of horizontal arm CMMs. (16)

(OR)

b. Explain the 4 important phases of machine vision system with diagrams wherever necessary. (16)