Roll.No.									

B.E./B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, Nov / Dec 2013

MANUFACTURING ENGINEERING

FIFTH SEMESTER

IE272 METROLOGY AND INSPECTION / MN371 / MF9252 ENGINEERING METROLOGY

(REGULATIONS 2002/2004/2008)

Time: 3 hr | Maximum Mark: 100

Answer ALL questions

PART A – (10 x 2 = 20 marks)

1. Distinguish between dimensional and form tolerances.
2. Mention any 4 precautions to be taken while handling optical measuring devices.
3. State Taylor's principles of gauge design.
4. Mention few applications of bevel protractors.
5. Define 'constant chord' of a gear.
6. What are the causes of ovality in round components?
7. List few applications of a tool makers microscope.
8. What are the industrial uses of laser?
9. What is a CNC CMM?
10. Write short notes on nanometrology.

PART B – (5 x 16 = 80 marks)

11. a.i. Describe the construction and working of an ac laser interferometer. (12)
 ii. Write detailed notes on testing of machine tools using laser interferometer. (4)

12. a. Explain various types of errors that may arise in engineering measurements. (16)

(OR)

 b.i. Briefly explain various types of standards and practices. (12)
 ii. Write about the environment and conditions to be maintained in clean rooms. (4)

13. a.i. Explain with a neat sketch the construction and working of Optical mechanical comparator . (12)
 ii. Explain the process of wringing of slip gauges using a sketches. (4)

(PTO)

(OR)

b.i. Describe the design and applications of an angle dekkor. (10)

ii. Explain mathematically why sine bars are not suitable for measuring angles above 45° (6)

14.a. Explain how a pitch measuring machine is used for measuring the pitch of internal and external screw threads. (16)

(OR)

b. Explain the procedure for checking the straightness of a component using an autocollimator. (16)

15.a.Explain with neat diagrams the constructional features of various types of CMMs. (16)

(OR)

b. i. Elaborate on the industrial applications of machine vision. (8)

ii. Write detailed notes on nanometrology systems. (8)