B.E. /B.Tech. DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2011
MANUFACTURING ENGINEERING BRANCH
FOURTH SEMESTER

MF 9252 ENGINEERING METROLOGY

Duration: 3Hours **Maximum : 100 Marks**

Answer all the questions

Part-A (10 X 2 = 20 Marks)

1. What are the factors influencing measurements?
2. Write short notes on clean room.
3. List the advantages of pneumatic comparator.
4. What are the specialties of an angle dekkor?
5. Write about drunken errors in screw threads.
6. List the drawbacks of stylus and skid type surface roughness measuring devices.
7. What are the conditions necessary for interference to occur?
8. Explain the phenomena of constructive and destructive interferences.
9. What are the advantages of CMM?
10. List various types of lightings and their purpose.

Part-B (5 X 16 = 80 Marks)

11. i. Explain with schematic sketches the principle construction and working of NPL interferometer (12)
ii. Eloborate on the applications of interferometry in metrology. (4)

12.a. Explain various types of errors in engineering measurement with examples (16)

(Or)

b. Explain the art of handling and maintaining measuring instruments. (16)

13.a.i. Explain with a neat sketch the construction and functioning of Johansson's microkator (10)
ii. Explain any 3 types of limit gauges with neat diagrams (6)

(Or)

b.i. Explain the design and construction of injected graticule autocollimator (12)
ii. Explain mathematically why sine bars are not suitable for measuring angles above 45 degrees. (4)

14.a.i. Describe with a neat sketch the parts of a pitch measuring machine and explain how it is used for measuring the pitch of internal and external screw threads. (12)
ii. Explain how a hand-held base pitch measuring machine is used for checking the pitch of a gear. (4)

(Or)

b. Explain the procedure for checking the flatness of a surface using autocollimator. (16)

15.a.Explain the constructional aspects of bridge type CMMs with neat sketches (16)

(Or)

b. Explain the 4 phases of machine vision system. (16)