

ME 9306 METROLOGY AND MEASUREMENTS

19

Duration: 3Hours

Maximum : 100 Marks

Answer all the questions

Part-A

(10 X 2 = 20 Marks)

1. What is the need for measurement?
2. Define Error.
3. State Taylor's principles of gauge design.
4. What are clinometers?
5. Mention some advantages of lasers.
6. What is a machine vision system?
7. What is periodic error in screw threads?
8. Explain lobbing in roundness assessment.
9. List the advantages of hydraulic type power measuring equipments?
10. Define calibration.

Part-B

(5 X 16 = 80 Marks)

- 11.i. Distinguish between precision and accuracy. (6)
- ii. Write detailed notes on various types of standards. (10)

- 12.a.i. Discuss briefly on the evolution of measurements. (8)
- ii. Explain the concept of interchangeability and selective assembly. (8)
- (Or)
- b. Explain the construction and working of microptic autocollimator with a neat sketch. (16)

- 13.a. Describe the construction and functioning of Hetrodyne laser interferometer. Also mention its advantages and disadvantages. (16)
- (Or)
- b. Explain various types of horizontal arm CMMs, mentioning their pros and cons. (16)

- 14.a. Explain the procedure for checking the flatness of a component with the aid of an autocollimator. (16)
- (Or)
- b. Explain the procedure for checking the composite error of gears using Parkinson's rolling gear tester. (16)

15.a. Write notes on: i. Bimetallic strips (8)

ii. Thermocouples (8)

(Or)

b.i. Explain various possible reliability configurations of systems with suitable examples. (10)

ii. Write detailed notes on redundancy units. (6)