

DEPARTMENT OF MECHANICAL ENGINEERING

QUESTION BANK

METROLOGY AND CALIBRATION

UNIT-I

Part- A

1. Differentiate between sensitivity and range with suitable example.
2. Define system error and correction.,
3. Define: Measurand.
4. Define: Deterministic Metrology.
5. Define over damped and under damped system.
6. Give any four methods of measurement
7. Give classification of measuring instruments.
8. Define True size:
9. Define Actual size
10. What is Hysteresis
11. What is Range of measurement?:
13. Define Span:
14. What is Resolution:

Part – B

1. Draw the block diagram of generalized measurement system and explain different stages with examples.
2. Distinguish between Repeatability and reproducibility
3. Distinguish between Systematic and random errors
4. Distinguish between Static and dynamic response.
5. Describe the different types of errors in measurements and the causes.
6. List various types of measuring instruments and explain each one of them
7. List the various measurement methods and explain

UNIT-II

Part-A

1. List the various linear measurements?
2. What are the various types of linear measuring instruments?
3. List out any four angular measuring instrument used in metrology
4. What is comparators?
5. Classify the comparator according to the principles used for obtaining magnification.
6. How are all mechanical comparator effected?
7. State the best example of a mechanical comparator.
8. Define least count and mention the least count of a mechanical comparator.
9. How the mechanical comparator is used? State with any one example.
10. State any four advantages of reed type mechanical comparator.

Part – B

1. What is the constructional difference between an autocollimator and an angle dekkor.
2. How the displacements are measurement using laser interferometer.
3. Explain with the help of neat sketches, the principle and construction of an auto-collimator.
4. Explain the working principle of mechanical comparator with a neat sketch.
5. Explain the working principle of Electrical comparator with a neat sketch
6. Explain the working principle of pneumatic comparator with a neat sketch.
7. Explain with the help of neat sketches, the principle and construction of an Angle dekkor.

UNIT-III

Part-A

1. Name the various methods for measuring effective diameter.
2. Name the various methods for measuring pitch diameter.
3. Name the two corrections are to be applied in the measurement of effective diameter.
4. What is best size of wire?
5. Define. Drunken thread
6. What is the effect of flank angle error?
7. What are the applications of toolmaker's microscope?
8. Define: Periodic error.
9. What are the commonly used forms of gear teeth?
10. what are the types of gears?

11. Define: Module
12. Define: Lead angle
13. What are the various methods used for measuring the gear tooth thickness?
14. Name four gear errors.
15. Name the method used for checking the pitch of the gear.

Part-B

1. Explain the construction and working of floating carriage micrometer
2. How are the major and minor diameters of thread measured.
3. Define various terminologies related with screw thread
4. Define various terminologies related with screw gears
5. Explain any two taper measurements method.
6. Explain the construction and working of Gear tooth vernier
7. Explain a method used in the measurement of surface finish and flatness

UNIT-IV

Part-A

1. Name the different types of interferometer?
2. Name the common source of light used for interferometer
3. What is crest and trough?
4. What is wavelength?
5. What is meant by alignment test on machine tools?
6. List the various geometrical checks made on machine tools.
7. Distinguish between geometrical test and practical test on a machine tool.
8. What are the main spindle errors?
9. Write the various tests conducted on any machine tools
10. Why the laser is used in alignment testing?
11. Classify the machine tool test.
12. What are the different types of geometrical tests conducted on machine tools?
13. What is CMM?

Part – B

1. Explain the interferometric measurement of angle
2. Briefly explain Computer Aided inspection and Digital devices
3. Explain the working of Laser Interferometer
4. Explain Different types of CMM
5. Explain the constructional features and application of CMM.
6. Explain how profiles are checked using laser viewers
7. Explain the laser telemetric system with a suitable diagram
8. Elaborate on the topic of geometrical tolerance