

**BHAGWAN MAHAVIR COLLEGE OF ENGINEERING
& TECHNOLOGY, BHARTHANA, SURAT.
AUTOMOBILE DEPARTMENT**



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ASSIGNMENTS

Assignment 1

Mechanical Measurement

1. Define the terms: Measurand; Range; Least count
2. Differentiate between following: (1) Threshold and Resolution (2) Accuracy and Precision.
3. Explain various modes of measurements with example.
4. Explain the term “ Calibration”.
5. Describe errors and its types. Show sources of errors.
6. Explain Range and Span.
7. Define Sensitivity and Hysteresis.
8. What is Standards of measurements?

Assignment 2

Linear & Angular Measurement

1. What is wringing of slip gauges? Explain with neat sketch.
2. Discuss construction and working of telescopic gauge with neat sketch.
3. Explain use of sine bar with neat sketch; also write advantages and limitations of sine bar.
4. Explain construction and working of micrometer clinometers with neat sketch.
5. Describe with neat sketch the construction and working of a micrometer.
6. What is least count? How is it determined in case of vernier caliper? How is it determined in case of micrometer screw? figure mandatory.
7. State the use of (i) Slip gauges , (ii) Dial indicator.
8. Explain the construction and working of a Vernier Caliper.
9. State the different use of Telescopic gauge.
10. Explain with the help of neat sketches the principle and construction of an auto-Collimator.

Assignment 3

Measurement of Force, Torque and Strain

1. Explain the proving ring in brief.
2. Explain prony brake dynamometer with neat sketch.
3. What is the use of load cell? List types of load cell and explain any one of them in detail.
4. Explain Eddy current Dynamometer.
5. State the various types of load cells and explain any one of them with neat sketch.
6. What are different types of transducers?
7. List Method used for force measurement.
8. Enlist methods of measurements. Explain Slip gauges with wringing process.

Assignment 4

Displacement, Velocity/Speed, Acceleration, Measurement

1. With neat sketch explain piezoelectric accelerometer.
2. Explain stroboscope in brief.
3. What is LVDT device? Explain construction and working of LVDT with neat sketch, also write advantages and limitations of LVDT.
4. Write a short note on seismic accelerometer.
5. Give the classifications of Tachometers.
6. Explain Linear variable differential transducers.

Assignment 5

Temperature measurement

1. Compare thermocouple and thermistor.
2. Explain construction and use of bimetallic thermometer.
3. Describe the construction and working of RTD with its advantages and disadvantages.
4. Explain the principles and types of thermocouples.
5. Compare RTD and Thermistors as temperature measuring device.
6. What is International temperature scale (ITS)?
7. Explain Liquid in glass Thermometer.
8. Explain the principle of thermo couple. Also explain their calibration Method.

Assignment 6

Metrology

1. State necessity and objectives of metrology. Also explain in brief precision and accuracy.
2. Distinguish between line standard and End standard.

Assignment 7

Metrology of Gears and screw threads Screw Thread Measurement

1. Classify screw threads.
2. Explain parkinson gear tester with neat sketch.
3. Discuss elements of screw thread with neat sketch.
4. Give comparison between involute and cycloidal gears.
5. Describe with neat sketch the construction and use of Gear tooth vernier caliper.
6. Derive the expression for best wire size.
7. Explain Tool Maker's Microscope.
8. Draw neat sketch of gear tooth terminology.
9. List out various elements to be checked for accuracy of gear and describe any two.

Assignment 8

Metrology of Surface finish

1. With neat sketch explain following elements of surface texture: Roughness; Waviness; Lay
2. Explain pneumatic method of evaluating surface finish.
3. Explain following methods of specifying roughness value: Peak-to-valley height method; Centre-line-average method; Root mean square method.
4. Define : (1) primary texture and (2) secondary texture
5. Sketch and describe the construction and working of Tomlinson surface roughness tester.

Assignment 9

Comparators

1. What is comparator? Give its classification.
2. What are the important features of a good comparator.
3. List out various characteristics of good comparators.

Assignment 10

Miscellaneous Metrology

1. With neat sketch explain working of Johansson Mikrocator.
2. What is CMM? Explain different configuration of CMM with neat sketch.
3. Write the advantages of Coordinate measuring machines.
4. Explain Tool Maker's Microscope.
5. Explain the construction and working of bourdon tube pressure gauge with neat sketch.
6. Explain working of Mcleod gauge for pressure measurement.
7. Explain Working principal of Resistive Potentiometer.