2.6 30256 METROLOGY

UNIT-1 INTRODUCTION:

1.1 Units and standards of measurement
1.2 International, National and company standards
1.3 Line and end standards
1.4 Errors in measurement
1.5 Precision and accuracy

UNIT-2 LINEAR AND ANGULAR MEASUREMENT:

2.1 Vernier caliper, micrometers, height and depth gauges
2.2 Bevel protractor, sine bar, slip gauges, angle gauges and clinometers
2.3 Auto collimator, angle decker,
2.4 Taper measurements
2.5 Cylinder bore gauge, Telescopic gauge, feeler and wire gauge

UNIT-3 MEASUREMENT OF SURFACE FINISH:

3.1 Meaning of surface texture, primary and secondary texture
3.2 Terminology of surface roughness
3.3 Factors affecting surface finish
3.4 Representation of surface roughness parameters CLA and RMS values
3.5 Comparison and direct instrument methods of surface finish measurements.

UNIT-4 COMPARATORS:

4.1 Classification, advantages and working mechanism of dial indicators, pass meters
4.2 Mechanical, Electrical, Electronic and pneumatic comparators

UNIT-5 LIGHT WAVE INTERFERENCE:

5.1 Principle of interference
5.2 Interferometry applied to flatness testing
5.3 N.P.L. flatness interferometer

UNIT-6 GEAR AND SCREW MEASUREMENT:

6.1 Screw thread terminology, errors in threads
6.2 Effective diameter measurement by two wire and three wire methods
6.3 Major and minor diameter measurement, Thread micrometers
6.4 Gear tooth terminology6.5 Gear tooth Vernier caliper and its application
6.6 Measurement of gear pitch.

UNIT-7 LIMITS, FITS AND TOLERANCE:

7.1 Interchangeability - control and need
7.2 Definitions and Terminology of limits, fits and tolerances
7.3 Basis of limit system

7.4 Type of fits
7.5 Limit gauges

UNIT-8. MACHINE TOOL METROLOGY:
8.1 Alignment tests
8.2 Performance tests
8.3 Alignment test on lathe and drilling machine

UNIT-9. INSPECTION:
9.1 Inspection - concept, need and methods
9.2 Types of inspection.

Reference Books:
1. Engineering Metrology R.K.Jain
2. Engineering Precision Metrology R.C.Gupta
3. Engineering Metrology (Hindi) Mittal
4. Engineering Metrology (Hindi) Bhatnagar.
5. Engineering Metrology R.K.Rajput
6. Metrology Lab Manual Adithen, Bahl
7. Metrology M. Mahajan