B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

MECHANICAL ENGINEERING

Paper - VI : Engineering Metrology

Time : 3 Hours   **Maximum Marks : 75**

Answer question No.1 compulsory   *(15)*

Answer ONE question from each unit   *(4 × 15 = 60)*

1) a) What is a comparator? Classify.   **(2)**

b) Explain the principle of ring gauges.   **(2)**

c) What is microscopic inspection?   **(2)**

d) Explain locating pins.   **(2)**

e) Explain the principle of calibration.   **(2)**

f) Use of slip gauges.   **(2)**

g) Write advantages of CMM.   **(2)**

h) Define precision.   **(1)**

UNIT - I

2) a) Write the differences between hole based system and shaft based system. **(7)**

b) Explain with the help of diagrams the measurement of angle using the sine bar and slip gauges.   **(8)**

OR

3) a) Explain the term Selective Assembly.   **(5)**

b) Define terms : tolerance, allowance and limits.   **(6)**

c) Explain Taylor's principle of limit gauges.   **(4)**

UNIT - II

4) a) What are the steps involved in designing Jigs and fixtures. **(8)**

b) Briefly discuss the principle and operation of bevel gear generating machine with neat sketch. **(7)**

OR

5) a) With neat sketch explain about working of various clamping devices. **(8)**

b) Explain the principle of inspecting involute profile of gear tooth. **(7)**

UNIT - III

6) a) Name the various types of pitch errors found in screw? State their causes? **(7)**

b) Explain any pneumatic comparator, list out its merits and applications. **(8)**

OR

7) a) Explain the three wire method with neat sketches. **(7)**

b) With neat sketch explain the electrical and electronic comparator. **(8)**

UNIT - IV

8) a) Explain the procedure of 'alignment tests' to be done on a drilling machine. **(7)**

b) What are the elements of surface texture explain with a neat sketch. **(8)**

OR

9) a) Explain the details of construction, principle and operation of CMM. **(9)**

b) What is meant by alignment tests machine tools? Why they are necessary? Explain. **(6)**

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