1388

B. Tech 5th Semester Examination

Manufacturing Technology-II (O.S.)

ME-5005

Time : 3 Hours   **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note :   Attempt five questions in all, selecting one question from each section A, B, C and D. Section E is compulsory. Use of non-programmable calculator is allowed.

SECTION - A

1.   (a)   Explain orthogonal cutting and oblique cutting with its neat sketches and compare.

     (b)   Explain the conditions that promote the formation of the following types of chip.

           (i) Continuous chips without built up edge.

           (ii) Continuous chips with built up edge.

           (iii) Discontinuous chips.   **(8+12=20)**

2.   (a)   Define the various tool parts of a single point cutting tool with a neat sketch.

     (b)   What are the standard angles of cutting tool? Illustrate with an example.   **(10+10=20)**

SECTION - B

3.   (a)   What are the various forms of wear found in cutting tools? Show with a neat sketch.

(b) How do you define tool life? Explain the parameters that control the tool life of a single point cutting tool.

(8+12=20)

4. (a) What is the tool life equation and state the factor affecting the tool life.

(b) What is the use of a chip breaker? Discuss the various types of chips produced during metal machining process.

(8+12=20)

SECTION - C

5. (a) Why undercutting occurs in the gear teeth? How can it be prevented?

(b) Explain the gear hobbing process in detail.

(c) Explain the selection of gear cutter for cutting helical or spiral gears. **(4+8+8=20)**

6. (a) Explain the gear cutting by a formed tool.

(b) Explain the different gear finishing processes.

(c) Explain the gear shaving, gear honing and gear lapping processes. **(4+8+8=20)**

SECTION - D

7. (a) Distinguish between EDM and LBM on the basis of (i) working principle (ii) tool used (iii) accuracy & (iv) applications.

(b) Explain with neat diagram Ultrasonic Machining process and state four applications. **(12+8=20)**

8. (a) Explain various parameters that influence the performance of chemical machining process.

(b) Sketch and explain the schematic diagram of Abrasive Jet Machining system. **(10+10=20)**

SECTION - E

9. Short answer type questions:

   (i) What is side rake angle? Mention its effects.

   (ii) Explain the nose radius.

   (iii) What is function of chip breakers?

   (iv) Name the factors that contribute to poor surface finish in cutting.

   (v) Give two examples for orthogonal cutting.

   (vi) List the characteristics of cutting fluid.

   (vii) Name the various cutting tool materials.

   (viii) What are the different gear finishing processes?

   (ix) Differentiate between jigs and fixture.

   (x) What is chemical machining process? Explain in short.

   (10x2=20)