

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]  
(2125)

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**B. Tech 5th Semester Examination**  
**Manufacturing Technology-II (NS)**  
**ME-312**

**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 question in all, select one question from each section A, B, C and D. Section-E is compulsory.

**SECTION - A**

1. How are cutting tools classified? With the help of neat sketches, explain the tool elements and tool angles in case of a single point cutting tool made of HSS. (20)
2. What do you mean by economics of machining processes? Discuss the variation of cost elements with cutting speed in a single cut, single pass machining operation. (20)

**SECTION - B**

3. How is the tool life specified? State the factors which affect the tool life. A carbide cutting tool is used to machine a mild steel specimen at 25 m/min. The tool lasted for 3 hours. Estimate the cutting speed if the same tool operates for 2 hours at 25% higher speed Take  $n = 0.2$  (20)
4. (a) What do you mean by gear? Discuss various method of gear manufacturing with suitable examples and sketches. (10)

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- (b) What do you mean by fine finishing operations? Discuss briefly various methods of finishing components in manufacturing industry using fine finishing techniques. (10)

**SECTION - C**

5. What are Jigs and Fixtures? How are Jigs and Fixtures classified? Explain the principles of Jig and Fixture design. What are the advantages of using Jigs & Fixtures? Describe two types of locaters used in Jigs. (20)
6. What is the basic functions of presses and dies? How are dies classified? Explain them briefly. What are the causes of features of dies in metal working operations? Discuss the shear action in die cutting operation. (20)

**SECTION - D**

7. What do you mean by the term Unconventional Machining Processes? Discuss with a neat sketch, the principal, constructional detail and working of Electron Beam Machining process. List the characteristics, advantages, disadvantages and application of the process. (20)
8. What do you mean by Broaching? With the help of neat sketch, explain the main elements of broaching tool. How are broaching machines classified? What are the advantages, limitations and applications of broaching? (20)

**SECTION - E**

9. (i) Why cutting tools are provided with nose radius?  
(ii) State the difference between orthogonal cutting and oblique cutting.  
(iii) What are the regions of heat generations in metal cutting?

- (iv) What are the situations in which diamonds are used as cutting tools?
- (v) Name the metals and non-metals which are normally used for gears making.
- (vi) What do you mean by lapping?
- (vii) What is the function of dynamometer and how they are classified?
- (viii) What are the characteristics of an ideal cutting tool material?
- (ix) Explain why unconventional machining processes are used?
- (x) How does the dressing of a grinding wheel affect its performance? (10×2=20)