



- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No.2.
 3. Solve Question 3 OR Questions No.4.
 4. Solve Question 5 OR Questions No.6.
 5. Solve Question 7 OR Questions No.8.
 6. Solve Question 9 OR Questions No.10.
 7. Solve Question 11 OR Questions No.12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Assume suitable data whenever necessary.
 10. Diagrams and chemical equations should be given whenever necessary.
 11. Illustrate your answers whenever necessary with the help of neat sketches.
 12. Use of non programmable calculator is permitted.

1. a) Differentiate between orthogonal and oblique cutting. What is the utility of orthogonal cutting? **6**
- b) What are the purposes of cutting fluids? What are the types? **7**

OR

2. a) Name various cutting tool materials. Briefly describe one important tool material along with its characteristics and usability. **6**
- b) List the various types of chips produced during metal cutting. Describe the conditions in which these types of chips are produced. **7**
3. a) Establish the formula for torque and power required in drilling. **6**
- b) How do you define cutting speed and feed? State various factors that may be considered to fix cutting speed and feed. **7**

OR

4. a) What are the factors that affect tool life? Briefly describe their influence. **6**
- b) Describe in brief how you measure tool life. What is machinability and machinability Index? **7**
5. a) What is the main function of a Lathe? List various types of Lathes. **7**
- b) Why chucks are used? List various types of chucks used in lathes. Describe any one in brief. **7**

OR

6. a) Differentiate between a capstan, a turret and an engine lathe. 7
b) Name different types of drilling Machines? 7
7. a) Classify presses. Describe one in brief. 6
b) Define jigs and fixtures. Differentiate them. 7

OR

8. a) Name various parts of a power press and describe them in brief. 6
b) Describe different types of clamps used with jigs and fixtures? Briefly describe any two. 7
9. a) How would you classify the non-traditional machining processes? Explain the specific features of these processes. 6
b) Explain the principle of Abrasive jet Machining. 7

OR

10. a) Explain the principle of ECM. List its advantages. 6
b) Briefly describe the principle of electro-discharge machining (EDM) process. What are the advantages & disadvantages? 7
11. a) Explain with neat sketch "Plasma Arc welding". 7
b) Differentiate between TIG and MIG welding. 7

OR

12. Write short notes **any two**. 14
- a) Spot welding.
b) Electron Beam welding.
c) Laser Beam welding.
