

Elective - I : Tool Design

P. Pages : 2

Time : Three Hours



NJR/KS/18/4608

Max. Marks : 80

- 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. Illustrate your answers whenever necessary with the help of neat sketches.
 11. Use of non programmable calculator is permitted.
 12. Use of design data book is permitted.

1. A) How are cutting tools designated? State different types of systems used for designating cutting tools? 7

B) What are the various cutting tool materials? State different types of cutting tools used for machining? 7

OR

2. A) What do you understand by tool life? How is tool life determined? What are the variables that affect tool life? 7

B) What are the various types of chips? Explain in detail Merchant's theory. 7

3. A) What are single point tool angles? What are the advantages of increasing nose radius? 6

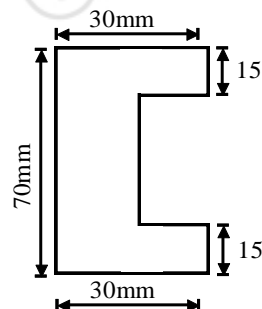
B) What are the various types of Drills? What is the importance of Drill point Geometry? 7

OR

4. A) What are milling cutters? How are they classified? What are the criteria for selection of milling cutter geometry and design? 7

B) Give the constructional features of taps & broaches? 6

5. A) Calculate the press Tonnage for blanking the part from steel sheet SAE-1020, 3mm thick 7



B) What are the various types of dies? Explain any one with neat sketch? 6

OR

6. A) Explain with reference to press working. 6
i) Scrap Allowance
ii) Spring loaded stripper.
iii) Effect of excessive clearance upon die cut metals?

B) What are the methods of reducing cutting forces? State and explain various die cutting operations? 7

7. A) How does forming differ from bending? What causes spring back? State Bending Terminology? 7

B) What are the various types of forming dies. Explain them in brief? 6

OR

8. A) How is Blank size determined in Drawing operation? Explain single and Double action Draw Dies. 7

B) What are the factors that affect metal flow? How are number of draws calculated? 6

9. A) How are forging dies classified? Write in details about single impression dies? 6

B) What are the various forging design factors? Explain any four of them in details? 7

OR

10. A) How is stock size determined in closed & open die forging? 6

B) What do you understand by 7
i) Fullering ii) Flattering
iii) Finishing iv) Cut off

11. Write short notes on **any three**. 14
i) Concept of degree of freedom in Jigs & Fixtures
ii) 3-2-1 principle of location
iii) Principle of location and clamping for Jig and fixture.
iv) Types of Jig Bushes

OR

12. Write short notes on **any three**. 14
i) Essential features of different types of fixtures.
ii) Design of fixtures
iii) Indexing Jigs & fixtures
iv) Automatic clamping devices.
