

17615

11718

3 Hours / 100 Marks

Seat No.

--	--	--	--	--	--	--	--

Instructions : (1) All Questions are *compulsory*.

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Use of Non-programmable Electronic Pocket Calculator is permissible.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE :

4 × 3 = 12

- (a) What are different types of ceramic coatings ? Write the specification of Carbide tips.
- (b) Draw a geometry of single point cutting tool.
- (c) What is tool life ? State tool life equation with meaning of each term. Write the factors on which tool life depends.
- (d) Explain back extrusion process with neat sketch.

(B) Attempt any ONE :

8 × 1 = 8

- (a) Explain Orthogonal cutting with a neat sketch.
- (b) Compare compound die & combination die.

2. Attempt any FOUR :**4 × 4 = 16**

- (a) State & explain in brief desirable characteristics of tool materials.
- (b) List out the assumptions made while drawing Merchant's circle theory.
- (c) Define :
 - (i) Chip thickness ratio
 - (ii) Shear angle
- (d) What is OBI Press ? Describe function of Flywheel in press.
- (e) What is strip layout ? What are the factors which influence the stock layout ?

3. Attempt any TWO :**2 × 8 = 16**

- (a) The certain Orthogonal cutting process, generate chip of thickness 0.53 mm.
The feed of the tool is 0.2 mm/rev & rake angle is 16°.
Find, (i) Shear Angle, (ii) Coefficient of Chip reduction, (iii) Cutting ratio.
- (b) Explain in detail heat treatment process of tool steels.
- (c) Explain following die operations with neat sketch :
 - (i) Cropping
 - (ii) Notching
 - (iii) Lancing
 - (iv) Piercing

4. Attempt any FOUR :**4 × 4 = 16**

- (a) What are different types of cutting Fluid ? State its applications.
- (b) What are different tool materials ? State its applications.
- (c) Explain with neat sketch continuous chip.

- (d) What is material utilization factor ? Describe with suitable example.
- (e) State advantages and limitations of compound die.

5. Attempt any FOUR :

4 × 4 = 16

- (a) What is bending pressure ? Write the formula for calculation of bending pressure. Describe the terms in it.
- (b) What is spring back in bending operation ? State its causes.
- (c) Explain constructional features of forging dies.
- (d) What are different methods of punch mounting ? Draw sketches of any two methods.
- (e) The washers of 20 mm outer diameter & 8 mm inner diameter are to be made by press operation from M.S. Sheet of 1 mm thickness. Calculate (i) Clearance, (ii) Size of punch & die.
- (f) Explain with neat sketch metal flow during drawing operation.

6. Attempt any TWO :

8 × 2 = 16

- (a) Draw neat label sketch of pressure die casting. Write its construction and working.
 - (b) (i) Explain bending terminology with the help of suitable sketch.
(ii) Draw a neat sketch of sparking & label it.
 - (c) State the factors on which bending pressure depends. How the size of a blank is calculated for drawing a cup ?
-

