17615

16172

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 : **12**

(a) Enlist different types of chips. Explain in brief any one of them.

(b) What are different types of ceramic coating ? State specifications of carbide tip.

(c) What is 'OBT' press ? State its specifications.

(d) Explain the term 'spring back'.

(B) Attempt any ONE : **06**

(a) Explain with neat sketch the cutting tool geometry of single point cutting tool.

(b) Explain 'Metal extrusion dies'. State its any two applications.

2. Attempt any FOUR : **16**

(a) Define :

(i) Chip thickness ratio

(ii) Shear angle

(b) Enlist different types of tool material. State atleast one application of each.

(c) Define term 'Tool life'. Write tool life equation indicating each term.

(d) Differentiate between compound die & combination die.

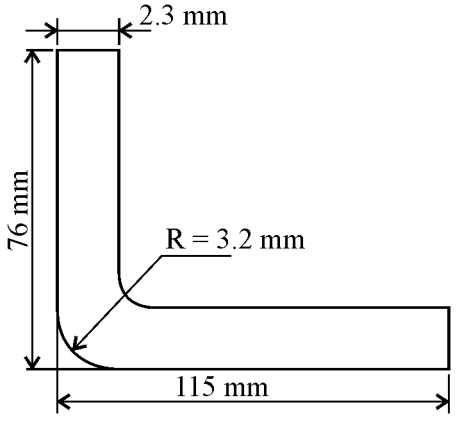
(e) List-out the merits and demerits of open die forging over closed die forging.

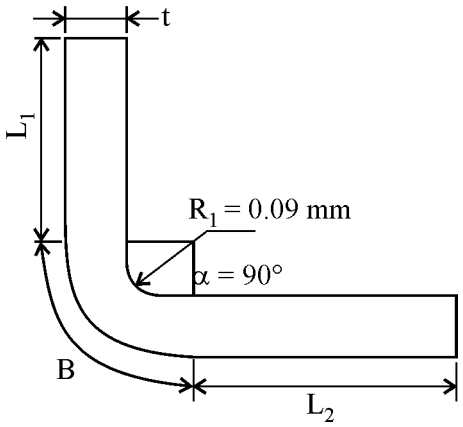
3. Attempt any TWO : **16**

(a) What is tool wear ? State types of tool wear. State factors affecting on tool wear.

(b) Explain with neat sketch process of making washer on progressive die.

(c) Determine the developed length of part shown in figure, assume $K = \frac{t}{3}$.





4. (A) Attempt any THREE : **12**

(a) Enlist different types of cutting fluid. State their applications.

(b) Useful tool life of HSS tool machining at 18 m/min is 3 hour. Calculate tool life when it operates at 24 m/min. Assume tool life exponential n = 0.125.

(c) What is strip layout ? List factors influencing the stock layout.

(d) State two products manufactured by using

(i) Pressure die casting

(ii) Forging dies.

(B) Attempt any ONE : **06**

(a) Calculate bending force for channel bending for given data.

thickness of blank = 3.2 mm

Bend length = 900 mm

Die and punch radii = 9.5 mm

Ultimate tensile strength of material = 400 N/mm^2.

Use K = 0.67 channel bending

(b) What is meant by 'clearance' ? Why it is important in shearing operation ?

5. Attempt any FOUR : **16**

(a) Explain 'Merchant's circle'.

(b) Compare between orthogonal and oblique cutting.

(c) Enlist different factors affecting on tool life.

(d) State any eight press operations.

(e) Explain metal flow during drawing with neat sketch.

(f) What is 'Spanking' ? Explain with neat sketch.

6. Attempt any TWO : **16**

(a) If the chip thickness of orthogonal turning operations is 0.62 mm and feed is 0.2 mm/rev, tool rake angle is 15°. Calculate :

(i) Chip thickness ratio

(ii) Chip reduction coefficient

(iii) Shear angle

(b) State the functions of

(i) Pressure pad

(ii) Knock out

(iii) Stock guide

(iv) Pilots

(c) Explain with neat sketch the construction of Simple push through drawing die.
