TE Auto / Sem V / Choice Based / Second Half 2018

12/12/2018

Paper / Subject Code: 31405 / Elective I: Press Tool Design

Duration -3 hours **Maximum marks -80**

N.B.

(1) Question No.1 is compulsory and Answer 3 Questions out of remaining 5 Questions.
(2) Assume suitable data wherever necessary
(3) Figurers to the right indicate full marks.

Q.1 a) Give reasons for any five of the following statements. 15

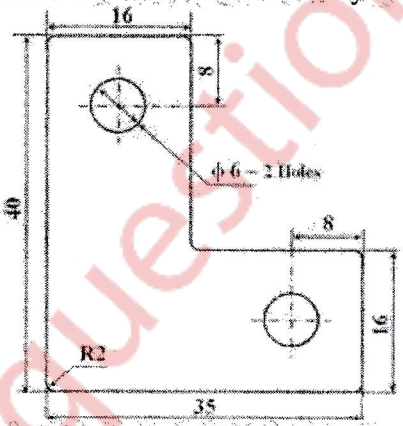
i) Shaving operation is carried out after blanking operation.
ii) Guide bushes and pillars are always hardened
iii) Optimum cutting clearance between die and punch should be provided to get proper cutting.
iv) Percentage reduction in second draw is always less than the percentage reduction in first draw.
v) Roll over radius is observed around the holes after piercing.
vi) Dowels are located diagonally across each other and as a part as possible.
vii) Material should be soft and annealed to carry out draw operation successfully.

b) Explain classification of presses. 05

Q. 2 a) Part shown in figure is to be produced on progressive die.

i) Draw an economical strip layout. Consider sheet size 400x 1200mm. 6
ii) Calculate tonnage required for the layout. 2
iii) Draw the following views of progressive die. 12

Plan view of bottom assembly and sectional front elevation.



Material: MS
Thickness: 2mm
Ultimate Shear Strength: 340N/mm^2
All dimensions are in mm

Q. 3 a) With the help of neat sketch explain the methods of reducing spring back in bending. 6

b) Explain various types of defects observed in deep drawing operation with causes and their remedies. 6

c) Illustrate the methods of punch mounting. 8

Q. 4 a) Explain double roll feed mechanism and also write its advantages. 7

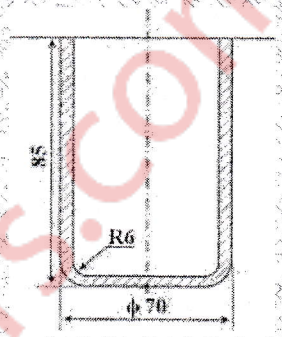
b) Write benefits, limitations and applications of press tools. 7

c) Write safety precautions to be taken in press shop. 6

Q. 5 a) Circular cup shown in figure is manufactured through deep drawing operation. Determine the following parameters. 15

i) Blank size ii) Percentage reduction iii) Number of draws
iv) Radius on punches and dies
v) Die clearance, punch diameter and die openingsize.
vi) Drawing force and blank holding force

Material: Copper
Thickness: 1.5mm
Yield Strength: 350N/mm^2
All dimensions are in mm



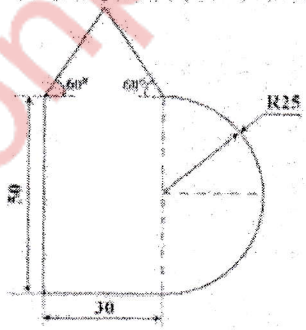
b) With the help of neat sketch explain working & construction of redraw die 5

Q. 6 a) A press is designed to for giving 120 ton at 30^{0}crank from BDC, when stroke is 20cm. prepare a monograph from BDC. From monograph explain: 10

i) Overloading of torque without overloading capacity
ii) Overloading of capacity without overloading of torque

b) Solve any two of the following 10

i) Find the centre of pressure of component shown in figure.



ii) Explain with the help of neat sketch embossing die.
iii) Explain with the help of neat sketch working & construction of trimming die.