

ONE TIME EXIT SCHEME

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10ME55

Fifth Semester B.E. Degree Examination, April 2018 Manufacturing Process – III

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Explain briefly how the different metal working process are classified on the basis of force applied. Draw necessary sketches. (10 Marks)
b. Classify and explain the forming processes. (05 Marks)
c. Differentiate clearly between wrought product and cast product. (05 Marks)
- 2 a. Explain the effect of following on metal working process:
i) Temperature ii) Friction iii) Lubrication (06 Marks)
b. Discuss the occurrence and effect of residual stresses on products obtained by metal working. (04 Marks)
c. What is hydrostatic pressure in metal working? Explain with neat diagram. Write the advantages and disadvantages of metal working process. (10 Marks)
- 3 a. Deduce the expression for forging load or force in open die forging system. Considering sticking friction. (10 Marks)
b. Explain the parameters of forging die. (05 Marks)
c. Mention the forging defects and explain. (05 Marks)
- 4 a. Explain the following rolling mills:
i) Two high mill ii) Four high mill iii) Cluster mill (10 Marks)
b. A strip is given 20% reduction in thickness by rolling operation. If its final thickness is 5 mm and roll radius is 500 mm. Determine the position of the neutral plane. Take $\mu = 0.2$ and assume the plane strain condition for rolling. (10 Marks)

PART – B

- 5 a. What is redundant work in drawing? How is it estimated? (07 Marks)
b. Write a note on dead zone formation in drawing. (03 Marks)
c. It is required to draw an aluminum tube of outside diameter 6 cm and inside diameter 5 cm to 5.8 cm outside diameter and 5 cm inside diameter using a cylindrical mandrel. Find the drawing stress for the following: (i) Ideal condition, (ii) $\mu_1 = \mu_2 = 0.04$ and $\alpha = 30^\circ$. Assume zero back pull and $\sigma_0 = 30 \text{ N/mm}^2$. (10 Marks)
- 6 a. Give the classification of extrusion process and explain any two processes with neat sketch. (10 Marks)
b. Explain the following: i) Metal flow and deformation during extrusion (10 Marks)
ii) Defects in extrusion (10 Marks)
- 7 a. A 75 mm diameter and 200 mm height cup is to be manufactured. Calculate the number of redraws (without annealing). Assume 50%, 30% reduction for successive draws. Use conventional sheet metal. (10 Marks)
b. With neat sketches explain combination die and progressive die. (10 Marks)
- 8 a. What is HERF? Explain the principle of working advantages and application of electro hydraulic forming with a neat figure. (10 Marks)
b. Write a note on: (i) Compaction, (ii) Sintering, (iii) Blending. (10 Marks)

Important Note - I On completing your answers, immediately draw the question paper to be treated as malpractice.