



USN

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10ME55

Fifth Semester B.E. Degree Examination, June/July 2019
Manufacturing Process – III

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.

PART – A

- 1 a. With neat sketches, explain the classification of metal working process on the basis of force applied. (10 Marks)
b. Explain the concept of true stress and true strain. (05 Marks)
c. Write a note on determination of flow stress. (05 Marks)
2 a. Explain with a neat sketch, the Hydrostatic pressure in metal working. (05 Marks)
b. Discuss the concept of deformation – zone geometry, in metal working. (05 Marks)
c. Explain the effect of the following on metal working processes: (10 Marks)
i) Temperature
ii) Strain rate
iii) Friction and lubrication.
3 a. Using neat sketch, describes the various types of forging processes/operations. (08 Marks)
b. Derive an expression for forging pressure and load acting in plane strain considering coulombs friction at the interface. (08 Marks)
c. List and explain various types of forging defects. (04 Marks)
4 a. Sketch and explain the different types of rolling mills. (08 Marks)
b. Describe the effect of front and back tension on the rolling load. (06 Marks)
c. A 300mm wide aluminum alloy strip is hot rolled in thickness from 20 to 15mm. The rolls are 1m diameter and operate at 100rpm. The rolling load is 2.36MN. Find the power required for this hot reduction. (06 Marks)

PART – B

- 5 a. Using a neat sketch, briefly explain the different features of a drawing – die. (08 Marks)
b. Explain optimal cone angle and dead zone formation in drawing. (04 Marks)
c. Explain with neat sketches, different methods of tube drawing. (08 Marks)
6 a. Define extrusion using neat sketches. Explain the different methods of extrusion. (08 Marks)
b. Sketch and explain extrusion of seam less tubes. (08 Marks)
c. List any four defects in extrusion and explain anyone. (04 Marks)
7 a. Give the classification of dies in sheet metal forming and explain combination dies with neat sketch. (08 Marks)
b. Explain with sketch the following operations in sheet metal forming: (12 Marks)
i) Cold extrusion
ii) Impact extrusion
iii) Hydrostatic extrusion.
8 a. Discuss the principle of ‘High Energy Rate Forming’ methods and with a sketch explain explosive forming. (10 Marks)
b. With a flow chart, explain in detail the powder metallurgy process. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8= 50, will be treated as malpractice.