

CRASH COURSE

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10ME55

Fifth Semester B.E. Degree Examination, May 2017 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 metal working processes are classified on the basis of forces applied. Draw necessary sketches. (08 Marks)
b. Differentiate between cold working and hot working. (06 Marks)
c. Explain clearly the two important yield criteria used in metal working process. (06 Marks)
- 2 a. Explain the effect of the following on metal working process:
(i) Friction and lubrication. (06 Marks)
(ii) Strain rate. (08 Marks)
b. Discuss the concept of deformation zone geometry in metal working. (06 Marks)
c. Define formability of materials. Discuss any one to determine formability. (06 Marks)
- 3 a. Deduce the expression for forging pressure and load in open die forging by slab analysis (consider sliding occurs at interface). (10 Marks)
b. With neat sketch, explain working of steam hammer. (05 Marks)
c. Explain different types of forging defects. (05 Marks)
- 4 a. Discuss maximum possible reduction in rolling mill. (06 Marks)
b. Explain the following rolling mill,
(i) Cluster mill (ii) Tandem mill. (10 Marks)
c. Determine the maximum possible reduction for cold rolling of a 300 mm thick slab when $\mu = 0.08$ and roll diameter is 600 mm. What is the maximum reduction on same mill for hot rolling when $\mu = 0.5$. (04 Marks)

PART – B

- 5 a. Explain with neat sketch any two methods of tube drawing process. (08 Marks)
b. Write a note on estimation of redundant work in drawing. (06 Marks)
c. Explain optimal cone angle and dead zone formation in drawing. (06 Marks)
- 6 a. Give the classification of extrusion process and explain hydrostatic extrusion process with a neat sketch. (08 Marks)
b. Write a note on extrusion dies. (06 Marks)
c. Discuss extrusion variables. (06 Marks)
- 7 a. With neat sketches, explain operations,
(i) Rubber forming (ii) Deep drawing. (10 Marks)
b. Explain with neat sketches working of progressive and compound die arrangement in sheet metal working. (10 Marks)
- 8 a. List the different methods of production of metal powders. Explain any two methods of production of metal powders, with neat sketches. (06 Marks)
b. What are the basic steps involved in powder metallurgy? Explain briefly. (08 Marks)
c. List out the applications of powder metallurgy component. (06 Marks)

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