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06ME73

Seventh Semester B.E. Degree Examination, December 2012
Manufacturing Processes - 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 the salient features of metal forming processes along with the advantages and limitations. **(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 the effect on the following on metal working processes :
i) Temperature ii) Friction and Lubrication. **(10 Marks)**

b. Comment on i) Deformation zone geometry ii) Residual stresses in wrought products. **(10 Marks)**

3 a. A circular disc of diameter 120mm and height 64mm is forged between two flat dies to 36mm height. Find the die load at the end of compression using the slab method of analysis. The yield strength of the material is given by $\sigma = 15.00\ (0.01 + \varepsilon)^{0.41}$ kg f/mm^2, and the co-efficient of friction is 0.05. Also find mean die pressure. **(08 Marks)**

b. Explain die design parameters in forging. **(06 Marks)**

c. What is the significance of slab analysis? Explain the steps involved in it. **(06 Marks)**

4 a. Define rolling. How are rolling mills classified? Briefly explain each, using schematic diagrams. **(08 Marks)**

b. Briefly explain the effect of front and back tension on the sheet, during rolling. **(04 Marks)**

c. Briefly explain the defects in rolled products and the action to be taken to prevent the defects. **(08 Marks)**

PART - B

5 a. Using a neat sketch, briefly explain the different features of a drawing die. **(06 Marks)**

b. Using neat sketches, explain rod drawing and wire drawing. **(06 Marks)**

c. Using neat sketches, explain different methods of tube drawing. **(08 Marks)**

6 a. Give the classification of extrusion processes and explain hydrostatic extrusion process, with a neat sketch. **(08 Marks)**

b. Explain the following : i) Defects in extrusion ii) Lubrication in extrusion. **(12 Marks)**

7 a. Give the classification of dies in sheet metal forming and explain "Combination Dies", with a neat sketch. **(07 Marks)**

b. Explain with neat sketch, the following i) Rubber forming ii) Stretch forming. **(08 Marks)**

c. Write a note on forming limit criteria. **(05 Marks)**

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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