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10ME55

Fifth Semester B.E. Degree Examination, Dec.2016/Jan.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. With neat sketches, explain the classification of metal working process on the basis of force applied. **(10 Marks)**

b. Differentiate between cold working and hot working. **(05 Marks)**

c. Explain the concept of true stress and true strain. **(05 Marks)**

2 a. Explain the effect of the following on metal working processes:
(i) Hydrostatic pressure (ii) Strain rate (iii) Friction. **(15 Marks)**

b. Explain briefly the formation of stresses in metal working. **(05 Marks)**

3 a. Explain the probable defects obtained in forgings. **(06 Marks)**

b. With a neat sketch explain the working of board drop hammer. **(08 Marks)**

c. List and explain briefly the die-design parameter in forging dies. **(06 Marks)**

4 a. Explain with neat sketches any three types of rolling mills. **(12 Marks)**

b. Calculate the rolling load if a steel sheet is hot rolled from a 40 mm thick slab of width 760. The reduction in thickness achieved is 30% and the roll diameter is 900 mm. The plain strain flow stress is 140 MPa at entrance and 200 MPa at the exit from the roll gap because of the increasing velocity. Assume the coefficient of friction as 0.3. If the roll speed is 100 rpm, what is power required to drive the rolls? **(08 Marks)**

PART – B

5 a. Explain with a neat sketch the rod drawing operation. **(08 Marks)**

b. With neat sketches, explain any three types of tube drawing process. **(12 Marks)**

6 a. Give the classification of extrusion process and explain hydrostatic extrusion. **(08 Marks)**

b. Explain in detail the deformation equipments and defects in extrusion. **(12 Marks)**

7 a. Explain the following operations with neat sketches:
(i) Deep drawing (ii) Roll bending **(10 Marks)**

b. With a neat sketch, explain the working of a progressive die in sheet metal forming. **(10 Marks)**

8 a. With neat sketches, explain the following forming methods:
(i) Explosive forming
(ii) Electromagnetic forming. **(12 Marks)**

b. Discuss with flow chart powder metallurgy process. **(08 Marks)**

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