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Seventh Semester B.E. Degree Examination, June/July 2011
Manufacturing Process - III

Time: 3 hrs.

Max. Marks:100

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

PART – A

1.
 - a. Derive the flow stress equation. (05 Marks)
 - b. Explain clearly the two important yield criteria used in metal working process. (08 Marks)
 - c. Show triaxial stress system, with a neat figure and also represent the same in a matrix form. (05 Marks)
 - d. Define wrought product clearly. (02 Marks)
2.
 - a. Discuss the effect of various parameters on metal working process. (10 Marks)
 - b. Explain deformation zone geometry. (05 Marks)
 - c. Write a note on workability of materials. (05 Marks)
3.
 - a. Explain “friction hill concept” and the factors affecting it in forging. (05 Marks)
 - b. Explain die design parameters in forging, with a neat figure. (10 Marks)
 - c. A flat circular disc of 25 mm diameter and thickness 75 mm is to be forged to half the height between flat disc. Calculate the maximum forging load. Take $\mu = 0.4$ and Y.S of material 40 kN/mm². (05 Marks)
4.
 - a. What is roll separating force? Explain clearly its influence on metal working process. (06 Marks)
 - b. Discuss the effect of front tension and back tension on the rolling process, with neat figures. (08 Marks)
 - c. In rolling a slab from 35 to 30 mm, calculate the coefficient of friction and the length of arc of contact. Take the value of roll radius as 250 mm. (04 Marks)

PART – B

5.
 - a. With a neat sketch, represent all the details of a drawing die. Explain briefly. (06 Marks)
 - b. With a flow chart, show the steps involved in wire drawing. (04 Marks)
 - c. What are drawing variables? Explain briefly. (05 Marks)
 - d. Explain the steps in tube drawing process. (05 Marks)
6.
 - a. Explain clearly the variables influencing extrusion process. (10 Marks)
 - b. Explain impact extrusion. (05 Marks)
 - c. Show how metal flow pattern varies with and without friction in extrusion, with simple sketches. (05 Marks)
7.
 - a. With a simple sketch, explain what is sheet metal work. (05 Marks)
 - b. With neat sketches, explain combination die and progressive die. List the type of components produced in sheet metal work. (10 Marks)
 - c. Explain different type of defects in deep drawn products. (05 Marks)
8.
 - a. What is HERF? Explain the need. (04 Marks)
 - b. Explain explosive forming, with a neat figure. (06 Marks)
 - c. What is sintering? Explain its mechanism. (05 Marks)
 - d. Explain HIP, with a neat figure. (05 Marks)

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.