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B.E DEGREE END SEMESTER EXAMINATIONS

April- May 2013

B.E./B.Tech (Full Time)

Mechanical Engineering

VII SEMESTER (English medium)

ME 9041 – Theory of Metal Forming (R 2008)

Time: 3 Hrs

Max Marks: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. Define Hooke's Law.
2. Differentiate between Engineering stress and True stress.
3. What is work hardening?
4. Define the term ductility and malleability.
5. State the term visco plasticity.
6. What are the basic assumptions made for extrusion analysis?
7. What is meant by HERF technique?
8. What is stretch forming?
9. State the warm forging process.
10. What is sintering?

Part –B (5 x 16 = 80.Marks)

11. (i) What is meant by yield criteria? Discuss the Von Mises and Tresca yield criterion.
12. (a) Describe the following with neat sketches
 - (i) Uniaxial tensile test
 - (ii) Uniaxial compression test.

(OR)

- (b) What is plastic instability? Describe the plastic instability in biaxial tensile stress.

- 13 (a) Describe the following (8+8)
(i) Slab analysis (ii) Slip-line field theory

(OR)

- (b) Derive an expression for the drawing stress at the exit section for wire drawing process.

14. (a) Explain any four sheet metal forming methods with neat sketches. (4x4)

(OR)

- (b) What is superplasticity? Explain the superplasticity forming with neat sketches and discuss its applications, advantages and disadvantages.

- 15 (a) Describe the following forging processes with neat sketches. (8+8)
(i) Orbital forging (ii) Isothermal forging

(OR)

- (b) (i) Write in brief the basic steps in producing powders by powder metallurgy process. (8)

- (ii) Explain the cold isostatic pressing process. (8)