

B.E DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2011

23

MECHANICAL ENGINEERING BRANCH

FIFTH SEMESTER

ME 502 – THEORY OF METAL FORMING

(REGULATIONS 2004)

Time: 3 Hrs

Max Marks: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. What is meant by theory of plasticity?
2. Define stress tensor
3. Write the objective of uni-axial tension test
4. Define work hardening
5. What are the assumptions to be made on metal forming analysis?
6. State the property of Elasto plasticity
7. What is major difference between drawing and deep drawing process?
8. Define superplasticity
9. Name the various power metal techniques
10. State the advantages of warm forging process

Part –B (5 x 16 = 80 Marks)

11. a. What is meant by yield criteria discuss the vonmiese's yield criteria and tresca yield criteria
 12. a. Explain the following mechanical properties
 1. Bulk modulus
 2. Strain hardening
 3. Modulus of elasticity
 4. Resilience
- (OR)
- b. Describe the following tests with neat sketch
 1. Compression test (8)
 2. Bulge test (8)

13 a. Name the various metal forming analysis and explain any two metal forming analysis

(OR)

b. Describe the expression for the analysis of forging process under the plain strain condition between parallel overhanging platens

14. a. Discuss the following sheet metal forming methods

1. Bending (4)

2. Stretch forming (6)

3. Deep drawing (6)

(OR)

b. Explain the basic principle of superplastic forming process with neat sketch and write its advantages and applications

15. a. Describe the following special metal forming process with neat sketch

1. Orbital forging process

2. Isothermal forging process

(OR)

b. Discuss the various isostatic pressing process with neat sketches and state its applications