

B.E/ B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS. APRIL/MAY 2012

MECHANICAL ENGINEERING BRANCH

FIFTH SEMESTER

**ME502-THEORY OF METAL FORMING**

(REGULATIONS 2004)

Time: 3 Hrs

Max Marks: 100

17

**Answer ALL Questions**

**Part – A (10 x 2 = 20 Marks)**

1. State the plastic work
2. Define stress tensor
3. State the applications of uniaxial tension test
4. What is meant by work hardening?
5. What are the assumptions made in the slip line method?
6. Define the term Elasto plasticity.
7. Name the various HERF techniques
8. What are the process parameters to be considered in explosive forming?
9. State the advantages of orbital forging
10. List the various powder metal techniques.

**Part –B (5 x 16 = 80 Marks)**

11. (i) Differentiate between engineering stress and engineering strain (4)  
(ii) Describe the Von-mises and Trescas yield criteria (12)
  
12. a. Discuss the various mechanical properties (16)

(OR)

b. Explain the following tests

(i) Bulge test and

(ii) compression test (16)

13 a. (i) Discuss the slab analysis with neat sketch (16)

(OR)

b. (ii) Express the analysis of wire drawing process with neat sketch (16)

14. (a) Write short notes on following with neat sketches (16)

(i) Bending

(ii) Stretch forming

(iii) Deep drawing

(iv) Drawing

(OR)

(b) What is super plasticity? Explain basic principle of SPF process. State its advantages and applications. (16)

15 a. Explain the following process with neat sketches

(i) Isothermal forming

(ii) Warm forging (16)

(OR)

b.

Explain the following process

(a) Powder rolling

(b) Rubber pad forming process. (16)