



B.E DEGREE END SEMESTER EXAMINATIONS

April / May 2011

B.E. Mechanical Engineering

V SEMESTER

ME502 – Theory of Metal Forming (R 2004)

Time: 3 Hrs

Max Marks: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. What is meant by Strain Tensor?
2. State the term "Plastic Work".
3. What is meant by Work Hardening?
4. Name the various Mechanical Properties.
5. Define the "Elasto Plasticity".
6. What are the advantages of "Hot Forging Process"?
7. Name the various high energy forming techniques.
8. Differentiate the Drawing and the Deep Drawing process.
9. Write the advantages of "Worm Forging Process".
10. What is the main difference between "Blanking" and "Fine Blanking"?

Part –B (5 x 16 = 80 Marks)

11. What is meant by yield criteria? Discuss the Von misses and tresca yield criteria
 12. (a) Explain the following testing methods, Write its uses
 1. Uniaxial Tension Test 8
 2. Compression Test 8
- (OR)
- (b) Describe about the Plastic instability in biaxial tension stress.
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- 13 (a) Discuss the following metal forming analysis.
 1. Slab Analysis 8
 2. Slip Line Method 8

(OR)

(b) Explain with neat sketch the following Extrusion Process.

- | | |
|----------------------------|---|
| 1. Direct Extrusion. | 4 |
| 2. Indirect Extrusion. | 4 |
| 3. Impact Extrusion. | 4 |
| 4. Hydro Static Extrusion. | 4 |

14. (a) Write short notes on the following sheet metal process with neat sketch.

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|---------------------|---|
| 1. Stretch Forming. | 4 |
| 2. Benching. | 4 |
| 3. Embossing. | 4 |
| 4. Coining. | 4 |

(OR)

(b) What is Superplasticity? Explain working principle of Superplastic forming process.

10

Write it's applications, advantages and disadvantages.

6

15 (a) Explain the following Sheet Metal Forming Process.

- | | |
|--------------------------------|---|
| 1. Orbital Forging Process. | 8 |
| 2. Isothermal Forging Process. | 8 |

(OR)

(b) Name the various Powder Metal Techniques. Explain any two with neat sketches.