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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

MECHANICAL ENGINEERING

Sixth Semester

ME502 / ME9041 THEORY OF METAL FORMING

(Regulation 2004/2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What is plastic work?
2. Define stress sensor.
3. What is work hardening?
4. Write the application of bulge test.
5. What are the assumptions to be made in numerical methods?
6. State the advantages of cold forging.
7. Name the various high energy rate forming techniques.
8. What are the process parameters influencing superplastic forming?
9. State the applications of powder metal techniques.
10. State the importance of warm forging.

Part – B (5 x 16 = 80 marks)

11. What is meant by yield criteria? Discuss the Von-Mises and Tresca yield criterion. (16)

12. a) Describe the following test (8+8)
 - (i) Uniaxial test
 - (ii) Compression test

(OR)
- b) Discuss the phenomena of plastic instability in biaxial tensile test. (16)

13. a) Name the various metal forming analysis. Explain any two method of analysis with suitable sketches. (16)

(OR)

- b) (i) Describe the following terms (4+4)
 - (a) Elasto plasticity
 - (b) Elasto visco plasticity
- (ii) Discuss the Hydrostatic extrusion process with a neat sketch. (8)

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14. a) Write short notes on the following sheet metal operations.

(i) Deep Drawing (ii) Stretch forming (iii) Bending (iv) Drawing

(OR)

b) Explain the working principle of explosive forming process with its advantages and disadvantages.

15. a) (i) Describe the iso-thermal forging process with a neat sketch.

(ii) Explain the high speed extrusion process with a neat sketch.

(8)

(OR)

b) Write short notes on the following

(8+8)

(i) Micro blanking (ii) Rubber pad forming