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B.E (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2012

MECHANICAL ENGINEERING BRANCH

VIII SEMESTER

ME 9041 – Theory of Metal Forming

35

(REGULATIONS 2008)

Time: 3 Hrs

Max Marks: 100

Answer ALL Questions

Part – A

(10 x 2 = 20 Marks)

1. Define stress tensor.
2. What is meant by yield criteria?
3. State the application of compression test.
4. Name the various mechanical properties.
5. State the applications of tandem mill.
6. Define Columb's law of friction.
7. Define superplasticity.
8. Name the various sheet metal operations.
9. Write the advantages of warm forging.
10. What is the need of sintering process?

Part – B (5 x 16 = 80 Marks)

11. a. (i) Differentiate between the engineering stress and engineering strain 04
(ii) Discuss the theory of plastic deformation. 12
12. a. Write short notes on the following with sketches.
(i) Uni-axial tension test 08
(ii) Bulge test 08
(or)
- b. Explain about the plastic instability in Bi-axial tensile test? 16

13. a. Name the various metal forming analysis. Explain any two methods. 16
- (or)
- b. Write short notes on the following.
- (i) Elasto visco plasticity 05
 - (ii) Planetary mill 05
 - (iii) Hydrostatic extrusion 06
14. a. (i) Explain the deep drawing operation with a neat sketch. 08
- (ii) Discuss about the stretch forming operation with a neat sketch. 08
- (or)
- b. (i) What is meant by HERF technique? 04
- (ii) Describe about the superplastic forming process with a neat sketch. State its advantages, limitations and applications. 12
15. a. Explain the following forging methods with sketches.
- (i) Orbital forging 08
 - (ii) Isothermal forging 08
- (or)
- b. Name the various powder metal techniques. Explain any two of them and write its advantages & disadvantages. 16