Code No. : 6306

FACULTY OF ENGINEERING
B.E. 3/4 (Prod.) I Semester (Supplementary) Examination, July 2010
METAL FORMING TECHNOLOGY

Time : 3 Hours] [Max. Marks : 75

*Note : Answer **all** questions from Part A. Answer **five** questions from Part B.*

PART – A 25

1. What is plasticity cycle ? Explain. 2
2. Is plain rolling an example of plain stress or plain strain condition and why ? 2
3. What is the shunt height of a die ? 2
4. Distinguish compound and progressive die. 3
5. What is spinning and stretch forming operations ? Explain. 3
6. Match the following : 3

A	B
a) Diamond die	i) Edge bending of sheet
b) Feed rolls	ii) Closed die forging
c) Pad force	iii) Wire drawing
	iv) Planetary roll mill

7. Why is camber provided on rolls ? 2
8. Gauge Length and diameter of tensile specimen do not influence percent elongation. (True/False) 2
9. What are powder rolling and roll bending ? Explain. 3

10. Match the following : 3

A	B
a) Thin sheets	i) impact extrusion
b) I-beams	ii) SEN DIZIMIR mill
c) Tooth paste tubes	iii) Shape rolling
	iv) Embossing

PART – B 50

11. a) Distinguish Vonmise criteria and Tresca criteria for yielding of metals. 6

b) Describe the advantages and disadvantages of cold working and hot working in metal working. 4

12. a) An alluminium cup of 120 mm depth and 60 mm inside diameter is to be deep drawn from a 4 mm thick sheet metal. Determine the blank size required neglecting the punch and die corner radii. 6

b) Discuss the methods of reducing cutting forces in blanking and piercing operations. 4

13. a) A 100 mm diameter and 500 mm long mild steel billet is to be hot extruded to a final diameter of 80 mm through a 130 degree total angle die at a speed of 1 meter per minute. Determine the extrusion force and power required for the operation assuming average yield stress of the material as 100 N/mm^2. 6

b) Show that variation of drawing load with die angle and explain how various components of total drawing work vary with die angle. 4

14. a) Explain the principle of working of counter blow hammer with a sketch and mention its merits. 5

b) Explain the design of the forging die for drop forging. 5

15. a) Derive an expression for roll load, roll torque and roll power. 6

b) Sketch and explain the rolling equipment and rolling mills. 4

16. Write short notes on **any two** of the following : **(2×5=10 Marks)**

a) Plane stress and plane strain conditions

b) Types of presses

c) Flow forming

d) Hydrostatic extrusion.

17. Write short notes on **any two** of the following : **(2×5=10 Marks)**

a) Isothermal forging

b) Combination die

c) Rolling of Rail road rail.

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