

**ML 9301– THEORY AND APPLICATIONS OF METAL FORMING**

(REGULATIONS 2008)

Time: 3 Hrs

Max Marks: 100

**Answer ALL Questions**

**Part – A (10 x 2 = 20 Marks)**

1. What is meant by strain rate?
2. Define Octahedral Shear stress.
3. What is meant by slip?
4. Define the term "Workability"
5. What is meant by fullering?
6. State the functions of flash in forging operation.
7. What are the basic assumptions made in the fundamental concept of Metal rolling?
8. Define Thread rolling process.
9. Write the advantages of Fine blanking process.
10. Name the various deep drawing defects.

**Part –B (5 x 16 = 80 Marks)**

- 11 What is yield Criteria? Describe the analysis Tresca's and Von Mises yield Criteria. 16
  - 12 a) I . Discuss the roll of hydrostatic pressure in metal forming operation. 8  
II . Discuss the functions of the boundary lubrication and full fluid film lubrication 8
- (OR)
- b) I What is meant by hot shortness? 4  
II Explain the different classification of metal forming processes. Write their advantages, disadvantages and applications 12
- 13 a) I Explain the working principle of hydraulic press with a neat sketch. Write down its advantages and limitations. 10  
II Differentiate between the open die forging and closed die forging process with a neat sketches 6

(OR)

b) I) Discuss the classification of rolling mills with neat sketches. 8

II) Describe the various rolling defects. Write their causes and remedies. 8

14 a) I) Discuss the various deformation patterns with neat sketches in extrusion process. 8

II) Explain the Hydrostatic Extrusion process with neat sketches. Write their advantages. 8

(OR)

b) I) Discuss the simple analysis of extrusion process. 8

ii) Describe the various production methods of seamless pipes 8

15 a. Write a short note on the following 16

i) Shearing

ii) Blanking

iii) Bending

iv) Deep drawing

(OR)

b. Explain the working principle of explosive forming process with neat sketch. 16  
Write their advantages, disadvantages and applications.