

8. Explain the following : (20)

- (a) Elasto-Plastic approximations
- (b) Stiffness matrices
- (c) Material Integration Schemes
- (d) Steady state solution for drawing

Roll No. ....

**22224**

**M.Tech. 1st Semester.-Mechanical  
Engg. (Machine Design)  
Examination- December, 2016**

**METAL FORMING ANALYSIS**

**Paper : M-807-A**

**Time : 3 hours**

**Max. Marks : 100**

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Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

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**Note :** Attempt any **five** questions. All questions carry equal marks.

1. (a) Explain work hardening and Anisotropy in Yielding in detail. (10)

(b) Explain the yield criteria for ductile material with the help of a proper graphical representation. (10)

2. Explain the following : (20)

(a) Slip line field theory

(b) Stress Strain relations in elastic and plastic deformation.

3. (a) The conventional stress-strain curve is lower than the true stress-strain curve in tension, while the opposite is correct in compression. Why ? (10)

(b) Discuss how temperature and strain rate affects metal working processes. (10)

4. (a) Explain and analyse the technological aspects of wire drawing process in detail. (10)

(b) Explain the following : (10)

(i) Stretch forming

(ii) Deep drawing

5. (a) Discuss various lubrication methods in hot and cold working processes. (10)

(b) Explain the process of extrusion and its types. Explain how are seamless pipes produced with the help of extrusion process ? (10)

6. (a) Describe the implicit and explicit formulations in detail. (10)

(b) Differentiate between Lagrangian and Eulerian approaches in relation to finite element methods. (10)

7. (a) Discuss various forming defects in products and their critical effects along with their remedies. (10)

(b) Write a short note on the use of international standards in metal forming problem solutions and system design. (10)