

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VII EXAMINATION – SUMMER 2025**

**Subject Code:2171913**

**Date:19-05-2025**

**Subject Name: Metal Forming Analysis**

**Time:02:30 PM TO 05:00 PM**

**Total Marks:70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Differentiate direct and indirect extrusion process **03**  
(b) State difference between hot forming and cold forming process **04**  
(c) Derive the formula for Rolling Load using Slab Method with usual notations **07**
- Q.2** (a) Explain need of metal forming processes in industries. **03**  
(b) Explain Wire Drawing processes in brief. **04**  
(c) Explain VonMises & Tresca theory of yielding. **07**
- OR**
- (c) Give short note on Two-Dimensional Mohr's circle method for stress analysis. **07**
- Q.3** (a) What do you understand by spring back in press working? **03**  
(b) Explain Anistropy in sheet metal. **04**  
(c) Explain about importance of Upper bound and Lower bound theorem in metal forming. **07**
- OR**
- Q.3** (a) Explain clearance in sheet metal operation. **03**  
(b) Differentiate between punching and blanking. **04**  
(c) Explain typical arrangement of roll & roll mills with neat sketches. **07**
- Q.4** (a) Define (1) Notching (2) Nibbling (3) Slitting, for pres work **03**  
(b) How is impression die forging different from closed die forging? **04**  
(c) Explain deep drawing process and forces in circular cup drawing with neat sketches. **07**
- OR**
- Q.4** (a) Explain various Rolling defects **03**  
(b) Explain friction board drop hammer for forging. **04**  
(c) What is Drawability? List and Discuss factor Affecting to Drawability. **07**
- Q.5** (a) Explain Punching operation with neat sketch. **03**  
(b) Discuss on materials used for making wire drawing dies. **04**  
(c) With neat sketch explain the steps of close die forging process. **07**
- OR**
- Q.5** (a) Define (i) dry drawing (ii) wet drawing (iii) tube drawing. **03**  
(b) Discuss various Forging defects. **04**  
(c) Explain in detail about Forming limit curve with a neat sketch. **07**

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