

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - VII EXAMINATION - WINTER 2025

Subject Code: 2171913

Date: 24-11-2025

Subject Name: Metal Forming Analysis

Time: 10:30 AM TO 01:00 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.**

	Marks
Q.1 (a) Explain need of metal forming processes in industries.	03
(b) Give Classification of Metal Forming Processes and Explain any one.	04
(c) Define following terms:(i)Hot forming(ii)Cold forming(iii)Yield strength(iv)Flow stress(v)Strain rate(vi)Principal stress(vii)Plasticity.	07
Q.2 (a) Explain Briefly Two Dimensional Mohr's stress circles.	03
(b) Sketch a cross section of a tungsten carbide wire drawing die and show its different portion and their geometry.	04
(c) Prove Hencky's first theorem for Slip Lines with usual notations.	07
OR	
(c) Explain typical arrangements of roll & roll mills with neat sketches.	07
Q.3 (a) Differentiate open die forging and closed die forging.	03
(b) Explain velocity discontinuities along slip lines with neat sketch.	04
(c) Explain upset forging process with neat sketch.	07
OR	
(a) Explain a Forming Limit diagram.	03
(b) Discuss direct and indirect extrusion with neat sketch.	04
(c) What is the principle of magnetic pulse forming? Describe the types of components that may be made by this process.	07
Q.4 (a) Define (i) dry drawing (ii) wet drawing (iii) tube drawing	03
(b) Why lubricants use in extrusion process?	04
(c) Explain friction board drop hammer for forging.	07
OR	
(a) Define angle of bite and discuss its effect in rolling process.	03
(b) Differentiates between Blanking and Punching operations.	04

- (c) How does hydrostatic pressure affect the yield strength of metal? 07
- Q.5** (a) What do you understand by spring back in press working? 03
- (b) Why friction measurement is necessary in forming process? 04
- (c) Explain various operations performed on sheet-metal press machine. 07

OR

- (a) Discuss Forging defects. 03
- (b) How is contact length affected by elastic deformation of rolls? 04
- (c) With neat sketch explain the steps of close die forging process. 07
