

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 7 – EXAMINATION – SUMMER 2026

Subject Code: 2171913

Date: 01/06/2026

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) Determine engineering Strain and True strain. **03**
 - (b) How do you represent strain hardening effect? **04**
 - (c) Explain electro -hydraulic forming process also write its advantages and disadvantages. **07**
- Q.2**
- (a) Explain velocity discontinuities along slip lines with neat sketch. **03**
 - (b) State differences between Hot working and Cold working process. **04**
 - (c) Explain Two Dimensional Mohr's stress circles. **07**
- OR
- (c) Explain briefly about Tresca Yield Criteria with necessary sketch. **07**
- Q.3**
- (a) What do you understand by spring back in press working? **03**
 - (b) State differences between Direct and Indirect Extrusion process. **04**
 - (c) Explain Friction board Drop Hammer for forging. **07**
- OR
- Q.3**
- (a) What is Upset Forging? **03**
 - (b) What is the effect of following factors on the rolling process ? **04**
 - (i) The co-efficient of friction.
 - (ii) Forward and Backward tension.
 - (iii) Reduction.
 - (iv) Diameter of rolls.
 - (c) What is Drawability ? List and discuss factor for affecting to Drawability. **07**
- Q.4**
- (a) Define Angle of Bite and discuss its effect in Rolling process. **03**
 - (b) Explain metal flow in compression of circular disc between two flat dies. **04**
 - (c) Explain (i) Forming limit diagram and (ii) Anisotropy in sheet metal. **07**
- OR
- Q.4**
- (a) What do you understand by shear in Punch and Die. **03**
 - (b) Explain Clearances in sheet metal operation. **04**
 - (c) Explain various Rolling defects in detail. **07**

- Q.5** (a) Differentiate between Compound and Progressive Die. **03**
(b) Define nesting and explain why it is used in sheet metal operation. **04**
(c) Explain various operation performed on sheet metal press machine. **07**

OR

- Q.5** (a) Why Lubricants use in Extrusion Process ? **03**
(b) How is impression die forging different from closed die forging ? **04**
(c) Drive the formula of rolling load using Slab method with usual notations. **07**
