

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (OLD) EXAMINATION – WINTER 2023****Subject Code:2171913****Date:12-12-2023****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.

- Q.1** (a) Draw flow curves for 1) rigid- ideal plastic 2) rigid plastic 3) elastic plastic **03**
(b) Give Classification of Metal Forming Processes and Explain any one. **04**
(c) State advantages of metal forming process. **07**
- Q.2** (a) Draw different types of rolling mills used in rolling process. **03**
(b) Discuss Rolling defects. **04**
(c) Prove Hencky's first theorem for Slip Lines with usual notations. **07**
- OR**
- (c) Briefly explain the 2-Dimensional Graphical representation of Von Mises' and Tresca's yield criteria for plastic deformation **07**
- Q.3** (a) Explain compound and progressive dies. **03**
(b) Differentiate open die forging and closed die forging. **04**
(c) Discuss stresses developed in deep drawing process with neat sketch. **07**
- OR**
- Q.3** (a) Explain Wire Drawing processes in brief **03**
(b) Discuss direct and indirect extrusion with neat sketch. **04**
(c) Explain about importance of Upper bound and Lower bound theorem in metal forming.. **07**
- Q.4** (a) What is upset forging? **03**
(b) Explain spring back effect in bending process **04**
(c) Explain the analysis of Strip Drawing process with usual notations. **07**
- OR**
- Q.4** (a) Define (i) dry drawing (ii) wet drawing (iii) tube drawing. **03**
(b) List and Discuss factor Affecting to Drawability. **04**
(c) Analysis of compression of circular disc with slab method **07**
- Q.5** (a) Discuss Forging defects. **03**
(b) Briefly explain Forming limit curve with a neat sketch. **04**
(c) Explain various operations performed on sheet-metal press machine. **07**
- OR**
- Q.5** (a) Define angle of bite and discuss its effect in rolling process. **03**
(b) Explain Anistrophy in sheet metal **04**
(c) With neat sketch explain the steps of close die forging process. **07**
