

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3171921****Date:06-12-2023****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) State general advantages and limitations of metal forming **03**
(b) Briefly explain Forming limit curve with a neat sketch. **04**
(c) Explain briefly about Tresca yield criteria with necessary sketches **07**
- Q.2** (a) Draw different types of rolling mills used in rolling process. **03**
(b) Explain spring back effect in bending process. **04**
(c) Draw and explain typical stress-strain diagram for ductile material **07**
- OR**
- (c) Discuss slip line and upper bound method for extrusion process. **07**
- Q.3** (a) Differentiate blanking and punching operation with sketch **03**
(b) Discuss Anisotropy and its effects in deep drawing. **04**
(c) Explain various operations performed on sheet-metal press machine. **07**
- Q.3** (a) Explain Wire Drawing process with sketch **03**
(b) Differentiate direct and indirect extrusion process. **04**
(c) Explain two dimensional stress analysis with Mohr circle diagram **07**
- Q.4** (a) Define angle of bite and discuss its effect in rolling process **03**
(b) Discuss various rolling defects. **04**
(c) Derive the formula for Rolling Load using Slab Method with usual notations. **07**
- OR**
- Q.4** (a) Define (i) dry drawing (ii) wet drawing (iii) tube drawing. **03**
(b) What is upset forging? **04**
(c) Analysis of compression of circular disc with slab method **07**
- Q.5** (a) Explain with neat sketch defects in Forging process **03**
(b) Discuss effect of temperature on yield strength. **04**
(c) What is drawability? List and discuss factor affecting to drawability **07**
- OR**
- Q.5** (a) Discuss on materials used for making wire drawing dies. **03**
(b) State difference between compound and progressive dies. **04**
(c) Define forging and discuss about open die forging and closed die forging with suitable sketches **07**
