

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code:2171913****Date:24-05-2024****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.

		MARKS
Q.1	(a) Explain Briefly Two Dimensional Mohr's stress circles.	03
	(b) Advantages and Disadvantages of Metal forming process.	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) Define Term: Angle of Bites in rolling process with its effects.	03
	(b) What do you understand by camber of sheet and camber of roll?	04
	(c) Discuss Analysis of strip rolling derive equation for projected arc length.	07
OR		
	(c) Explain typical arrangements of roll & roll mills with neat sketches.	07
Q.3	(a) Briefly explain metal flow in compression of circular disc between two flat dies in forging.	03
	(b) Explain the term barreling and bulging in connection with forging of non circular shapes between two flat dies.	04
	(c) Explain friction board drop hammer for forgings.	07
OR		
Q.3	(a) What are the effects of re-crystallization?	03
	(b) Show the when the three principal stresses are equal the stress on any plan is equal to the principal stress.	04
	(c) Briefly explain 2Dimensional graphical representation of Von Mises' and Tresca's yield criteria for plastic deformation.	07
Q.4	(a) Explain clearance in sheet metal operation.	03
	(b) Differentiates between Blanking and Punching operations.	04
	(c) Short note on compound and progressive dies.	07
OR		
Q.4	(a) Which lubrication are used in Wire drawing ? Explain.	03
	(b) Explain about Wire drawing machinery.	04
	(c) What is Drawability of sheet metal? Explain various factors affects on Drawability.	07
Q.5	(a) What defects may occur in components made by extrusion process?	03
	(b) What lubricants are used for following cases? (a)Hot extrusion of steel.	04

- (b) Hot extrusion of aluminum.
 - (c) Cold extrusion of steel.
 - (d) Hot extrusion of copper.
 - (c) Explain (i) Forming Limit diagram (ii) Anisotropy in sheet metal. **07**
- OR**
- Q.5**
- (a) Differentiates between closed die & open die forging. **03**
 - (b) Typical stress strain diagram of ductile material. **04**
 - (c) Explain Isotropic and Kinematic work hardening with sketch. **07**
