

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019

Subject Code: 2172108

Date: 28/11/2019

Subject Name: Metal Working Processes

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.

		MARKS
Q.1	(a) What is the role of friction hill in rolling?	03
	(b) Briefly explain the mechanics of metal working.	04
	(c) Draw engineering stress strain diagram for ductile and brittle material with suitable example and differentiate between true stress and engineering stress.	07
Q.2	(a) What do you mean by workability?	03
	(b) What is the importance of preform design in forging? Write general rules for close die design.	04
	(c) Classify metal forming processes based on the type of force applied on to the work piece as it is formed into shape. Explain any two processes in detail.	07
	OR	
	(c) Why Von Mises yield criterion is more accurate to describe actual situations than Tresca yield criterion? Explain.	07
Q.3	(a) What is the importance of back and front tensions in sheet rolling?	03
	(b) With figure show the typical arrangement of rollers in rolling mills.	04
	(c) Explain recovery, recrystallization and grain growth. What are their effects on rolling?	07
	OR	
Q.3	(a) Define the terminology: bloom, billet and slab.	03
	(b) Discuss any two rolling defects with their causes and remedies.	04
	(c) Define rolling and explain neutral point and angle of bite. Draw different rolling mills with neat sketch and label it.	07
Q.4	(a) What is the function of flash in forging?	03
	(b) Discuss about wire drawing variables.	04
	(c) Classify tube drawing processes. Explain them with neat sketch.	07
	OR	
Q.4	(a) Define the term: Edging, Fullering and Swaging.	03
	(b) Classify forging hammer and press. Discuss with diagram for energy restricted.	04
	(c) Define forging and compare open die and close die forging.	07
Q.5	(a) What is extrusion ratio? What is the extrusion ratio for steel and aluminum?	03
	(b) What are the die materials and their manufacturing processes?	04
	(c) What is extrusion? Explain different extrusion process and explain role of lubricant.	07
	OR	
Q.5	(a) What is the full form of FEM? What is the importance of it?	03
	(b) Explain briefly deep drawing process with figure.	04
	(c) With neat sketch discuss shearing and stretch forming.	07
