

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2021****Subject Code:2162508****Date:04/08/2021****Subject Name: Metal Forming Technology****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.

		<b>MARKS</b>
<b>Q.1</b>	(a) Define Recrystallisation describe the factors affecting to Recrystallisation Temperature.	<b>03</b>
	(b) Differentiate Hot and Cold working processes.	<b>04</b>
	(c) Explain slip and twinning mechanics of plastic deformations with neat sketch.	<b>07</b>
<b>Q.2</b>	(a) Define forgeability and list out the factors affecting to the degree of forgeability.	<b>03</b>
	(b) Explain the effect of clearance (between punch and die) and punch speed on the deformation zone with neat sketch.	<b>04</b>
	(c) Describe various defects in rolled product with sketch and state their causes and remedies.	<b>07</b>
<b>OR</b>		
	(c) Explain the procedure of roll pass design with schematic diagram.	<b>07</b>
<b>Q.3</b>	(a) Compare direct and indirect extrusion with neat sketch.	<b>03</b>
	(b) Explain planetary rolling mill with neat sketch. What is the function of back-up rolls?	<b>04</b>
	(c) Explain the technique of producing seamless cylinders and tubes by hot cupping and drawing.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Explain hydrostatic extrusion process with its application.	<b>03</b>
	(b) Explain following terminology in the context of rolling. (i) Neutral plane (ii) Backward slip (iii) Forward slip (iv) Angle of Bite	<b>04</b>
	(c) Explain Impact extrusion process with neat sketch and give its application.	<b>07</b>
<b>Q.4</b>	(a) Explain wire drawing process briefly.	<b>03</b>
	(b) Describe briefly tube or pipe drawing with the use of moving mandrel.	<b>04</b>
	(c) Explain the Force Analysis in forging with neat sketch.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Discuss about deep drawing process.	<b>03</b>
	(b) Explain Wire Drawing operation with schematic diagram.	<b>04</b>
	(c) Explain Cold Heading and Rotary Swaging processes.	<b>07</b>
<b>Q.5</b>	(a) Explain Spring back phenomenon in sheet metal forming.	<b>03</b>
	(b) Discuss about stretch forming process.	<b>04</b>
	(c) Explain the principle of metal spinning with neat sketch. Write its advantages, disadvantages and applications.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) Explain Press Brake forming process briefly.	<b>03</b>

- (b) Explain V-bending and Edge bending with simple diagram. **04**
- (c) Discuss the process steps involved in high energy rate forming of metals and list out its advantages, limitations and applications **07**

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