Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2162508 **Date:09/05/2016**

Subject Name: Metal Forming Technology

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.**

Q.1	**(a)**	Write difference between hot working & cold working process considering grain size, grain structure, recrystalization temperature & mechanical properties.	**07**
	(b)	Explain various yield criteria in metal forming process & highlight their significance.	**07**
Q.2	**(a)**	Define following terms in context of rolling process (i) backward slip (ii) forward slip (iii) angle of bite.(iv) Roll Separating Force.	**07**
	(b)	In a rolling process, 25 mm thick plate is rolled to 20 mm in a four high mill. Determine the co-efficient of friction if this is the maximum reduction possible. Roll diameter is 500 mm. Find neutral section, backward & forward slip & maximum pressure. σ_o= 100 N/mm^2 for hot rolls of mild steel at about 1100°C.	**07**
		OR	
	(b)	Explain Two-High, Three-High & Four-High Rolling Mill with neat sketch.	**07**
Q.3	**(a)**	Write difference between open die & closed die forging.	**07**
	(b)	Give causes & remedies for the following forging defects (i) Cold Shut (ii) Pitting (iii) Decarburization	**07**
		OR	
Q.3	**(a)**	With the help of neat sketch explain coining & embossing process.	**07**
	(b)	Considering plain strain condition, Analyze forces in open die forging process.	**07**
Q.4	**(a)**	Write difference between direct extrusion & indirect extrusion.	**07**
	(b)	Explain extrusion of components like seamless pipes & tubes.	**07**
		OR	
Q.4	**(a)**	Sketch hydrostatic extrusion and describe the process.	**07**
	(b)	Analyze extrusion process considering round bar extrusion through conical die.	**07**
Q.5	**(a)**	Describe tube or pipe drawing with the use of moving mandrel.	**07**
	(b)	Write brief not on wire drawing. How maximum reduction can be done in one pass?	**07**
		OR	
Q.5		Explain any THREE Sheet metal forming process. (i) Metal Spinning (ii) Stretch Forming (iii) HERF (iv) Press Brake Forming	**14**

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