Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II – EXAMINATION – SUMMER 2017

Subject Code: 2722801 **Date:26/05/2017**

Subject Name: Mechanics of Metal Forming

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.**

Q.1	**(a)**	Explain the basic principles of metal forming.	**07**
	(b)	Explain about importance of Upper bound and Lower bound theorem in forging.	**07**
Q.2	**(a)**	Derive the relationship between yield strength in Shear and Yield strength in tension according to Tresca's hypothesis.	**07**
	(b)	Write principle of normality. Explain Incremental Plastic Strain.	**07**
		OR	
	(b)	How does mohr's circle help in analysis of metal forming?	**07**
Q.3	**(a)**	Discuss plastic instability in tension test.	**07**
	(b)	What is work hardening? How does it affect mechanical properties?	**07**
		OR	
Q.3	**(a)**	Discuss Bulge test. Explain its importance.	**07**
	(b)	Explain the concept of constitute relationship. State the general form of a Constitutive equation and explain the importance of it.	**07**
Q.4	**(a)**	Define strain rate and super plasticity.	**07**
	(b)	Prove $P=2K-\sigma_x$, By Slab Analysis for Sheet Drawing.	**07**
		OR	
Q.4	**(a)**	Explain about the factors which affects the yield strength.	**07**
	(b)	Explain slip line field theory.	**07**
Q.5	**(a)**	Discuss about localized necking in biaxial stretching.	**07**
	(b)	Explain about Hills Anisotropic Plasticity Theory.	**07**
		OR	
Q.5	**(a)**	List out CAD/CAM applications in extrusion, forging and sheet metal forming.	**07**
	(b)	Discuss about bending in sheet metal process with various stresses in bending.	**07**

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