Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-II Examination July 2010

Subject code: 720808

Subject Name: Manufacturing Processes and Analysis

Date: 08 / 07 /2010 **Time: 11.00am – 1.30pm**

Total Marks: 60

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain the slab method for analysis of metal forming process.	**06**
	(b)	Explain vacuum casting.	**06**
Q.2	**(a)**	Describe the hydrostatic pressure and workability of forming.	**06**
	(b)	A steel plate 20 mm thick is to be rolled to 14 mm in a four high mill having roll diameter 480 mm. If yield stress is 12 Kg/mm^2, determine: (a) Angle of bite (b) Coefficient of friction if this is the maximum reduction possible (c) Position of neutral section (d) Backward slip (e) Forward slip (f) Maximum pressure.	**06**
		OR	
	(b)	Explain and analyze flask-less moulding process.	**06**
Q.3	**(a)**	Explain continuous casting and give its advantages over other type of casting.	**06**
	(b)	Define residual stresses in welding. Describe types of residual stresses in welding. How residual stresses in welding can be controlled?	**06**
		OR	
Q.3	**(a)**	Define weldability. Describe effect of alloying elements on weldability.	**06**
	(b)	What is cryogenic machining? Explain it's working principle. Write application of cryogenic machining.	**06**
Q.4	**(a)**	What is hot machining? Explain it's working principle. Write application of hot machining.	**06**
	(b)	Explain mechanism, transfer medium and immediate source of energy for different non-conventional machining processes.	**06**
		OR	
Q.4	**(a)**	Describe the effect of frequency, amplitude, feed force, hardness ratio of the tool and the work piece, grain size and concentration of abrasive in the slurry on material removal rate in ultra sonic machining.	**06**
	(b)	Describe the effects of various parameters in abrasive jet machining.	**06**
Q.5	**(a)**	In an EDM operation employing relaxation circuit, discuss the effects of (i) supply voltage and break down voltage (ii) charging resistance (iii) capacitance on the metal removal rate.	**06**
	(b)	What is rapid prototyping? Explain basic process step of rapid prototyping.	**06**
		OR	
Q.5	**(a)**	Explain and analyze stereo lithography method of rapid prototyping and give its limitation.	**06**
	(b)	Explain and analyze laminated object manufacturing process and give its advantages over other rapid prototyping techanics.	**06**

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