Seat No.: _____ *Enrollment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER • 2015

Subject code: 162603 **Date: 08/05/2015**

Subject Name: Rubber Equipment Design-I

Time: 10.30am-01.00pm **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)**	Answer the following.	**(08)**
	(i)	Write the causes & remedies for compounding related problems in Calendered Sheet.	
	(ii)	Explain the difference between Gaskell & Ardichivli's assumptions for calculation of Roll Separating force in Calender Machine.	
	(b)	Answer the following.	**(06)**
	(i)	Write the different causes for thickness variation in Calender Sheet.	
	(ii)	List the different parts of Calender Machine. Write the specification of any two parts for standard Calender Machine used in Rubber Industry.	
Q.2	**(a)**	Short Note on " Cross Mixing Device".	**(07)**
	(b)	Answer the following.	
	(i)	"Roll Speed tends to decrease with increase in Roll Diameter." Justify the statement in relation with Mixing Mill.	**(02)**
	(ii)	Calculate the batch size & H.P. of motor for standard mixing mill used in rubber industry.	**(02)**
	(iii)	Write the function of Break Shoe, Oil Tank & Roll end gear in Mixing Mill.	**(03)**
		OR	
	(b)	Define the term Gratez & Griffith's number. Discuss the different causes with their different values.	**(07)**
Q.3	**(a)**	Explain in detail about the Flow analysis in Internal Mixer.	**(07)**
	(b)	Short note on "Fill Factor" in Internal Mixer.	**(07)**
		OR	
Q.3	**(a)**	Discuss in detail about different Ram Configuration in Internal Mixer with their advantages & disadvantages.	**(07)**
	(b)	Describe about Full Four Flighted Rotor Geometry in Internal Mixer.	**(07)**
Q.4	**(a)**	Discuss the construction & working of presses classified according to source of power.	**(07)**
	(b)	Write the different parameters for designation of Mechanical Presses.	**(07)**
		OR	
Q.4	**(a)**	Describe in detail about the Pressure accumulator. Derive the formula for capacity of accumulator.	**(07)**
Q.4	**(b)**	The weight of a 350 mm plunger of an accumulator is 4500 Kg. What additional weight is to be placed upon it to develop a hydraulic pressure of 42 Kg/cm^2?	**(04)**

	(C)	The gauge reading on the outlet of a hydraulic fitting is 250 Psi. If the force on the fluid is 750lbs, What is the diameter and area of the piston?	**(03)**
Q.5	**(a)**	Discuss about the Shrink Fit Construction & Autofrettage Construction for Autoclave.	**(07)**
	(b)	Short Note on "Materials for High Pressure Vessels".	**(07)**

OR

Q.5	**(a)**	Which are the principal stresses produced in the wall of shell in Autoclave due to high pressure? Explain in detail with their formula.	**(07)**
	(b)	Short Note on "Delta-ring Closure."	**(04)**
	(c)	Write the advantages of Bridgeman Closure.	**(03)**

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