Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER • 2014

Subject Code: 162603 **Date: 23-05-2014**

Subject Name: Rubber Equipment Design-I

Time: 10:30 am - 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)**	Answer the following.	**(08)**
	(i)	List the factors on which Power Consumption of Mixing Mill depend?	
	(ii)	Justify the importance of breaker plate in mixing mill.	
	(iii)	In the case of two roll mill what will be the effect if Griffith's number is small & large?	
	(iv)	"The incorporation step has two parallel mechanisms." Explain the statement.	
	(b)	Discuss the machine related problems, their causes & remedies for two roll mill.	**(06)**
Q.2	**(a)**	Discuss the Construction & Operation of Calender Machine.	**(07)**
	(b)	Answer the following.	
	(i)	What is the cause for the sheet produces from Calender which is thicker at centre & thinner at the edges? State its remedy also.	**(03)**
	(ii)	Which are the important demands on a modern calendar? How they are physically inter-related?	**(04)**
		OR	
	(b)	Write the specification of 13 ½" X 14 ½" Calender Machine.	**(07)**
Q.3	**(a)**	Write in detail about the configuration of ram. Establish the relationship between ram position & batch size.	**(07)**
	(b)	Describe in detail about Full-Four Flighted Rotor Geometry.	**(07)**
		OR	
Q.3	**(a)**	Discuss in detail about flow analysis in Internal Mixer.	**(07)**
	(b)	Explain about Heat Transfer in Internal Mixer.	**(07)**
Q.4	**(a)**	Explain the classification of press according to source of power.	**(07)**
	(b)	Explain in detail about Hydraulic Jack with Lever arrangement.	**(07)**
		OR	
Q.4	**(a)**	Explain in detail about designation of Mechanical Presses with example.	**(07)**
	(b)	Answer the following.	
	(i)	Find the length of stroke required for an accumulator having a displacement of 110 liters. The dia. of the plunger is 350 mm.	**(04)**
	(ii)	The dia. of the ram of a hydraulic jack is 8 cm, the diameter of the plunger of the pump is 2 cm & mechanical advantage of the lever is 10. If the efficiency of the machine is 75%, what load will be raised by a force of 392.4 N at the end of the lever?	**(03)**

Q.5	**(a)**	Explain in detail about the design of autoclave based on Max. Energy of Distortion.	**(07)**
	(b)	List the different designs of self-sealing type joints used in autoclave. Write about any two in detail.	**(07)**

OR

Q.5	**(a)**	Discuss the different types of constructional features for High pressure Vessels.	**(08)**
	(b)	Which stresses must be taken in account if the temperature of the vessel wall is not uniform? Explain in detail.	**(03)**
	(c)	Explain the Shell design based on Tangential Stress.	**(03)**

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