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

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2162603 **Date:11/05/2016**

Subject Name: Rubber Equipment Design-I

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)	Answer the following.	(08)
	(i)	Importance of Chilled cast iron for mixing mill rolls.	
	(ii)	Which points should be kept in mind while calculating the power consumption for a mixing mill in Rubber industries?	
	(iii)	Give the difference between Dispersion & Distribution in Mixing terms.	
	(iv)	Discuss the importance of Cross Mixing for Rubber Compound.	
	(b)	Which size of Mixing mill is widely used in Rubber Industries? Write its specification in detail.	(06)
Q.2	(a)	Discuss in detail about Flow Analysis of Internal Mixer.	(07)
	(b)	Write in detail about Heat Transfer in Internal Mixer.	(07)
		OR	
	(b)	Discuss in detail about Ram Construction for Internal Mixer.	(07)
Q.3	(a)	Discuss in detail about antifriction bearings of Calender Roll Machine.	(07)
	(b)	List out the problems related to compounding & processing encountered in Calendering sheet. Write its Causes & Remedies also.	(07)
		OR	(07)
Q.3	(a)	Explain the calculation of Roll Separating Force in Calender Machine by using Ardichvili's equation.	
	(b)	Discuss the Construction & Operation of Calender Machine.	(07)
Q.4	(a)	Which points should be taken into consideration while selecting a Press?	(03)

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	(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	(04)

42 kg/cm^2?

	(c)	Discuss in detail about Power Press with its parts.	(07)

OR

Q.4	(a)	List the classification of Press based on 'Type & Design of frame' and 'Mechanism of Ram Driving'.	(03)
	(b)	The diameter 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 40 kgf (392.4N) at the end of the lever?	(04)
	(c)	Discuss in detail about Pressure Accumulator. Also derive the equation for capacity of accumulator.	(07)
Q.5	(a)	Write about Permanent closure for High Pressure Vessels.	(03)
	(b)	Describe about Shrink-fit construction with suitable diagram.	(04)
	(c)	Write a short note on 'Materials for High Pressure Vessels'.	(07)

OR

Q.5	(a)	Write a brief note on 'Jackets for vessels'.	(03)
	(b)	Write about 'Normal conditions' affecting during operation of High Pressure Vessels.	(04)
	(c)	Which Principal stresses produced in the wall of shell in Autoclave due to high pressure? Explain in detail with their formula.	(07)

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