

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)**
