

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI(NEW) – EXAMINATION – SUMMER 2019****Subject Code:2162603****Date:16/05/2019****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) List the factors on which batch size of mixing mill depends. **03**
 - (b) Justify the statement that “Roll speed tends to decrease with increase in roll diameter.” **04**
 - (c) State the importance of cross mixing. Short note on “cross mixing devices”. **07**
- Q.2**
- (a) Write about the jacket for high pressure vessels. **03**
 - (b) Describe the ‘Shrink-fit’ and ‘Autofrettage’ type of constructions for high pressure vessels. **04**
 - (c) Explain the Bridgeman closure and Delta-ring closure in detail. **07**
- OR**
- (c) Discuss about the Uhde-Bredtschneider closure and Double-cone seal ring closure with appropriate diagram. **07**
- Q.3**
- (a) What are the probable causes and possible solutions when stock temperature rises too quickly in internal mixer? **03**
 - (b) Write the advantages and disadvantages of internal mixer. **04**
 - (c) Write the importance of rotor shaft seals used in internal mixer. Discuss the different designs of the same. **07**
- OR**
- Q.3**
- (a) Compare the drop door and old type sliding door used as discharge door for internal mixer. **03**
 - (b) Describe in detail about ZZ₂ geometry for internal mixer. **04**
 - (c) Explain in detail about heat transfer in internal mixer. **07**
- Q.4**
- (a) What is the purpose of installing roll-preloading device? How does it work? **03**
 - (b) Write a brief note on roll-heating/cooling devices for calender. **04**
 - (c) Explain in detail about different types of roll configurations for calender. **07**
- OR**
- Q.4**
- (a) Which major requirements should be fulfilled by calender rolls? **03**
 - (b) Describe the construction and working of roll cross-axis device. **04**
 - (c) Write a short note on roll bearings. **07**
- Q.5**
- (a) Give the detailed description for the mechanical press having following designation:
S V A 2 – 1000 + 600 – 1800 x 1600 **03**
 - (b) Which law is responsible for the working mechanism of hydraulic press? Describe in brief about the same. **04**
 - (c) Explain in detail about any four ram driving mechanism with diagram. **07**

OR

- Q.5** **(a)** Write in brief about gap frame press. **03**
- (b)** Which points should be taken into consideration while selecting a press? **04**
- (c)** A Hydraulic press has a ram of 12 cm diameter & plunger of 1.5 cm diameter. **07**
Determine the load lifted if a force of 294.3 N is applied to the plunger. If the plunger has a stroke of 20 cm, how many strokes will be required to lift weight by 0.50 m? Also calculate the volume of additional liquid required & the power of motor driving the plunger if the time taken by the press is 15 minutes.

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