

GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012

Subject code: 162601**Date: 02/01/2013****Subject Name: Rubber Compound and Product Testing****Time: 02.30 pm - 05.00 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)** Discuss in detail about the vertical rebound test. **07**
- Q.1 (b)** Answer the following
- (i)** List the properties of unvulcanized rubber compound. Explain the method of measurement of any one property. **05**
- (ii)** Summarize the purpose of testing. **02**
- Q.2 (a)** Explain the term hardness with respect to rubber. Discuss any one method for hardness measurement. **07**
- Q.2 (b)** Answer the following
- (i)** Explain the importance of coefficient of thermal expansion of rubber. **04**
- (ii)** Write in brief about the non standard methods for dimension measurement. **03**
- OR**
- Q.2 (b)** Discuss in detail about the tensile test. **07**
- Q.3 (a)** Answer the following
- (i)** Define the following terms: (i) Antistatic Rubber (ii) Conductive Rubber (iii) Insulating Rubber (iv) Power Factor **04**
- (ii)** Write down the formula to calculate the permeability of rubber product under constant volume. **03**
- Q.3 (b)** Discuss in detail about the compression set measurement under constant deflection. **07**
- OR**
- Q.3 (a)** Answer the following
- (i)** Explain the volume resistivity of rubber with suitable diagram. **03**
- (ii)** How is permeability of rubber product measured by career gas method? **04**
- Q.3 (b)** Discuss in detail about the compression set measurement under constant load. **07**
- Q.4 (a)** Answer the following
- (i)** List the various modes of stress-relaxation. Which one is preferable? Why? **04**
- (ii)** Write down the practical significance and scope of tear test. **03**
- Q.4 (b)** Explain the test method to measure the swelling resistance of rubber when whole vulcanizate is exposed to liquid. **07**
- OR**
- Q.4 (a)** Answer the following

	(i)	Draw neat diagram of ross flexing machine showing its major components.	05
	(ii)	List the different types of test specimen used in tear test.	02
Q.4	(b)	Explain the test method to measure the swelling resistance of rubber of rubber when only one surface of rubber vulcanizate is exposed to liquid.	07
Q.5	(a)	Define the term abrasion. Which test methods are available to measure abrasion resistance of rubber? Discuss any one in detail.	07
Q.5	(b)	Answer the following	
	(i)	Explain the A-grade cracks and B grade cracks respectively.	05
	(ii)	Explain the term fatigue.	02
OR			
Q.5	(a)	Answer the following	
	(i)	Discuss the factors affecting the rate of wear.	04
	(ii)	Which different types of abrasants are used to carry out abrasion test?	03
Q.5	(b)	Discuss in detail about the accelerated ageing of rubber product in ozone test chamber.	07
