

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI • EXAMINATION – WINTER 2013

Subject Code: 162601**Date: 27-11-2013****Subject Name: Rubber Compound and Product Testing****Time: 02:30 pm to 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 purposes of testing. **07**
- Q. 1 (b)** Answer the following
- i** Why is it necessary to carry out the testing at different conditions? Also give the limitations of test result. **04**
- ii** Write a brief note method-A to determine the dimensions of product. **03**
- Q. 2 (a)** Discuss in detail about different types of durometer with working principle and their limitations. **07**
- Q. 2 (b)** Answer the following
- i** What do you mean by green shrinkage? How is it determined? **05**
- ii** Define the term PRI. Write down the formula to calculate PRI. **02**
- OR**
- Q. 2 (b)** Define the term resilience. Discuss in detail about the resilience measurement by using bashore resiliometer. **07**
- Q. 3 (a)** Discuss the terminologies related to tensile properties of vulcanized rubber and thermoplastic elastomer. **06**
- Q. 3 (b)** Answer the following
- i** Give the practical significance of tear test. How the tear test differs from tensile test? **04**
- ii** Write down the test specimen preparation and test conditions respectively for compression set test. **04**
- OR**
- Q. 3 (a)** With labeled diagram, explain the construction and working of tensile testing machine. **06**
- Q. 3 (b)** Answer the following
- i** Explain the factors affecting the tear strength of rubber product. **04**
- ii** Which methods are used to measure the compression set? Draw an experimental set up of any one method. **04**
- Q. 4 (a)** Discuss in detail about the ageing test of vulcanizate in presence of ozone. **07**
- Q. 4 (b)** Answer the following
- i** Write down the procedure of cut-growth measurement by using ross-flexing machine. **04**
- ii** How deterioration of rubber is carried out by microorganism? **03**

OR

Q. 4	(a)	Discuss in detail about the ageing test of vulcanizate in presence of air.	07
Q. 4	(b)	Answer the following	
	i	Explain the following grades of crack (i) Grade-B (ii) (i) Grade-C	04
	ii	Compare ozone degradation with oxygen degradation.	03
Q. 5	(a)	Explain the term permeability. Discuss the constant volume method to study permeability behavior of vulcanizate.	07
Q. 5	(b)	Answer the following	
	i	Draw a neat diagram of electrode assembly used to measure the volume resistivity.	04
	ii	Write a brief note on ASTM reference fuels.	03
OR			
Q. 5	(a)	Explain the term solubility constant. Discuss the constant pressure method to study permeability behavior of vulcanizate.	07
Q. 5	(b)	Answer the following	
	i	Write a short note on abrasants.	04
	ii	Write a brief note on ASTM reference oil.	03
