

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VI Examination-Nov/Dec-2011

Subject code: 162601

Date: 21/11/2011

Subject Name: Rubber Compound and Product Testing

Time: 10.30 am -1.00 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) Explain the generalized classification of physical tests with suitable examples. Also mention the limitations of test results. **07**

(b) Answer the following

- (i)** List the basic requirements of testing equipment. **03**
- (ii)** How is stress relaxation under compression differing from compression set? Also mention the practical significance of the stress relaxation test. **04**

Q. 2 (a) Answer the following

- (i)** Define the term Tack. How is Tack measurement carried out? **05**
- (ii)** Write in brief about the Green Strength. **02**

(b) Write down the short note on Durometers. **07**

OR

(b) Answer the following

- (i)** Which points are to be kept in mind during hardness measurement? **03**
- (ii)** Which are the different ways to apply indenting force on the vulcanizate? Which one is better? Why? **04**

Q. 3 (a) Answer the following

- (i)** Define the following terms: (1) Tensile Stress (2) Tensile Strength (3) Elongation (4) Elongation at break **04**

(ii) How can we express the result of compression set? **04**

(b) Write about the different types of pendulum used for resilience measurement. **06**

OR

Q. 3 (a) Answer the following

- (i)** Ring type test specimen gives the apparent values of Tensile Test- Justify this statement with suitable example. **04**

(ii) Write down the significance and scope of compression set measurement. **04**

(b) Draw labeled diagram of Goodyear- Helay pendulum used for **06**

resilience measurement.

- Q. 4** (a) Answer the following
- (i) Write in brief about the ASTM reference fuels and ASTM reference oil. **04**
- (ii) Explain the following terms: (1) Volume Resistivity (2) Surface Resistivity **04**
- (b) Discuss the theory of permeability. **06**
- OR**
- Q. 4** (a) Discuss the factors affecting the swelling **07**
- (b) Answer the following
- (i) Explain the following terms: (1) Antistatic Rubber (2) Conductive Rubber **03**
- (ii) How is out put of constant volume method to measure the permeability expressed? **04**
- Q. 5** (a) Discuss in detail about the accelerated ageing of rubber product in air oven? **07**
- (b) Answer the following
- (i) Give the name of apparatus used to measure the cut growth resistance of rubber product. Also mentioned its major components. **05**
- (ii) Define the term Tear Strength. Also write down the formula to calculate Tear Strength. **02**
- OR**
- Q. 5** (a) Discuss in detail about the accelerated ageing of rubber product in Ozone test chamber ? **07**
- (b) Answer the following
- (i) Write down the procedure to measure the cut growth resistance of rubber product. **04**
- (ii) List the different types of test specimens used to measure Tear Strength. **03**
