

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIth SEMESTER-EXAMINATION – MAY- 2012****Subject code: 162601****Date: 09/05/2012****Subject Name: Rubber Compound and Product Testing****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) Discuss in detail about the purpose of testing. **07**

Q. 1 (b) Answer the following

- i** What do you mean by green shrinkage? How is it determined? **05**
- ii** List the factors affecting the tack. **02**

Q. 2 (a) Answer the following

- i** How the dimensions of rubber products are measured by standard method? **04**
- ii** Which methods are available to determine the density of rubber? Which one is preferable? **03**

Q. 2 (b) Write down the full form of IRHD. Discuss the major components of IRHD apparatus. **07**

OR

Q. 2 (b) Answer the following

- i** Explain the term hardness and explain the principle of hardness test. **05**
- ii** How is shore-A durometer differs from shore-D durometer? **02**

Q. 3 (a) Answer the following

- i** Explain the term surface resistivity with suitable diagram. **03**
- ii** How is permeability of rubber product measured by carrier gas method? **04**

Q. 3 (b) List the methods available to measure the compression set. Discuss any one in detail. **07**

OR

Q. 3 (a) Answer the following

- i** Draw neat diagram of electrode assembly used to measure the volume resistivity of rubber. **04**
- ii** Write down the scope and practical significance of compression set test. **04**

Q. 3 (b) Explain the theory of permeability. **06**

Q. 4 (a) Answer the following

- i** How the result of ozone ageing test is expressed? Compare the ozone ageing with oxygen ageing. **04**
- ii** Explain the procedure to prepare the tear test specimens from finished rubber goods. **04**

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Q. 4 (b) Summarize the method to measure the impact resilience. Also give the **06**

name of the apparatus to measure the impact resilience with its major components.

OR

- Q. 4 (a)** Answer the following
- i** List the different types of ovens used to measure the ageing of rubber vulcanizate. Explain any one. **04**
 - ii** Write about various dies used to prepare the tear test specimens. **03**

- Q. 4 (b)** Discuss in detail about the vertical rebound test. **07**

- Q. 5 (a)** Answer the following
- i** Write in brief about the ASTM oil and ASTM fuels. **04**
 - ii** Explain the D-grade cracks and E-grade cracks respectively. **03**

- Q. 5 (b)** Discuss in detail about the tensile test. **07**

OR

- Q. 5 (a)** Answer the following
- i** Explain the construction and working of surface immersion apparatus. **05**
 - ii** Define the following terms: (i) Fatigue (ii) Flex life **02**

- Q. 5 (b)** Which physical test is used to determine the life of footwear sole? **07**
Discuss it in detail.
