

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2162601

Date: 27/04/2017

Subject Name: Rubber Compound & Product Testing

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.
4. Draw figures wherever necessary.

**Q.1 Answer the following**

**14**

1. Give the generalized classification of rubber tests.
2. List any two factors affecting the green strength of rubber compound.
3. Differentiate the adhesion and auto adhesion.
4. Write down the types of durometer.
5. What do you mean by compression set?
6. Give the types of extensometer used to measure the tensile strength of rubber product.
7. Which geometries are responsible to propagate tear in the rubber sample?
8. Define the term 'Rebound Resilience'
9. What do you mean by relative modulus?
10. Which rubbers come under category of insulating rubber?
11. What do you mean by flex life?
12. Give any two examples of ASTM reference fuel.
13. Which abrasants will come under a category of solid abrasants?
14. Mention the name of apparatus used to measure the cut growth resistance of vulcanizate.

- Q.2** (a) Write down the full form of IRHD. List the major components of IRHD test apparatus. **03**  
(b) Explain in brief about micro hardness test. **04**  
(c) Discuss in detail about the compression set test by following constant load method. **07**

**OR**

- Q.2** (c) Discuss in detail about the compression set test by following constant deflection method. **07**

- Q.3** (a) List the different types of pendulums used to measure rebound resilience. Write on any one. **03**  
(b) With labeled diagram, write about the different types of test specimens used to measure the tear strength. **04**  
(c) Discuss in detail about DE MATTIA test to measure the resistance to flex-cracking. **07**

**OR**

- Q.3** (a) Write about the scope and practical significance of rebound resilience test. **03**  
(b) Explain the factors affecting the tear strength of rubber. **04**  
(c) Discuss about the heat buildup test of vulcanizate by using Goodrich flexometer. **07**

- Q.4** (a) Write about the types of friction observed in vulcanizate. **03**  
(b) Explain construction and working of din abrader. **04**  
(c) Discuss in detail about the tensile test. **07**

**OR**

- Q.4** (a) Categorize the wear mechanism observed in rubber product. **03**  
(b) Explain the factors determining the rate of abrasion. **04**  
(c) Discuss the stress relaxation measurement under tension. **07**

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- |            |            |                                                                              |           |
|------------|------------|------------------------------------------------------------------------------|-----------|
| <b>Q.5</b> | <b>(a)</b> | Write a brief note on surface resistivity.                                   | <b>03</b> |
|            | <b>(b)</b> | How the permeability of vulcanizate is measured by career gas method?        | <b>04</b> |
|            | <b>(c)</b> | Discuss in detail about the accelerated ageing of rubber in presence of air. | <b>07</b> |

**OR**

- |            |            |                                                                          |           |
|------------|------------|--------------------------------------------------------------------------|-----------|
| <b>Q.5</b> | <b>(a)</b> | Write a brief note on volume resistivity                                 | <b>03</b> |
|            | <b>(b)</b> | Explain the given terms:(i)Permeability Constant(ii) Solubility Constant | <b>04</b> |
|            | <b>(c)</b> | Discuss ageing test of rubber in presence of ozone.                      | <b>07</b> |

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