

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2018****Subject Code: 2162601****Date: 16/11/2018****Subject Name: Rubber Compound & 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) List the basic requirements of testing equipment. **03**
(b) Give the classification of tests. Write about its relation with the purpose of testing. **04**
(c) Discuss in detail about principle of compression plastimeter. **07**
- Q.2** (a) Which are the different standard methods to measure dimension of test piece? Write their measuring range. **03**
(b) Write down the full form of IRHD. Discuss the hardness measurement of rubber product using IRHD apparatus. **04**
(c) Discuss in detail about the tensile test. **07**
- OR**
- (c) Discuss in detail about the tear test. **07**
- Q.3** (a) What are the significance and use of compression set test? **03**
(b) Write about the relation between swelling and time. **04**
(c) Discuss in detail about the vertical rebound test. **07**
- OR**
- Q.3** (a) Draw the schematic diagram of device for compression set under constant deflection. **03**
(b) Write in brief about the ASTM oil and ASTM fuels. **04**
(c) Explain in detail about the different types of pendulum geometry for rebound resilience test. **07**
- Q.4** (a) Describe the term surface resistivity with suitable diagram. **03**
(b) Define the terms 'abrasion' and 'wear'. Give the different types of wear mechanism with their example. **04**
(c) Write in brief about the types of fatigue test. List the major components of ross flexing machine with labeled diagram. **07**
- OR**
- Q.4** (a) Define the terms: (i) Antistatic Rubber (i) Conductive Rubber (iii) Insulating Rubber **03**
(b) Draw any two arrangements for abrasion test and write about the same. **04**
(c) Discuss in detail about the types of cracks observed in flex-cracking resistance test conducted on De-MATTIA apparatus. **07**
- Q.5** (a) Show the relation between crack size and strain for the measurement of effect of ozone. **03**
(b) Give the significance and calculation for the measurement of retraction at lower temperature. **04**
(c) Discuss in detail about the constant volume method to measure the permeability of rubber product. **07**

OR

- Q.5** (a) Write the preferred testing conditions during the ozone ageing. **03**
- (b) Write the standard procedure for the measurement of retraction at lower temperature. **04**
- (c) Explain in detail about the principle of carrier gas method to measure gas permeability. **07**

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