

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- IVth SEMESTER-EXAMINATION – MAY/JUNE- 2012

Subject code: 142604

Date: 31/05/2012

Subject Name: Introduction to Rubbers & Rubbery materials

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 construction and working of internal mixer. **07**

(b) Answer the following.

(i) Explain the classification of accelerated Sulphur vulcanization system. **04**

(ii) Which structural changes are brought about when rubber is vulcanized? **03**

Q. 2 (a) Discuss the applications and properties of reclaimed rubber. **07**

Q. 2 (b) Explain the classification of Polymers. **07**

OR

(b) Explain in detail about (i) Glass Transition Temperature (ii) Polymerization (iii) Hysteresis Loss. **07**

Q. 3 (a) Explain the Rubber elasticity in compression stress with appropriate diagram. **07**

(b) List the primary requirements to exhibit effective rubbery properties and explain in detail. **07**

OR

Q. 3 (a) Explain the Rubber elasticity in shear stress and derive the formula for shear stiffness with diagram. **07**

(b) List the factors affecting heat resistance of rubber and explain all the factors in detail. **07**

Q. 4 (a) Give Classification of fillers use in Rubber compounding. **07**

(b) Short note on Ribbed Smoke Sheet (RSS). **07**

OR

Q. 4 (a) Answer the following.

(i) Short note on Antidegradents. **04**

(ii) Draw the schematic representation of structure of Carbon Black. **03**

(b) Define the term: (i) Latex (ii) Tapping. Explain the Tapping process in detail. **07**

Q. 5 (a) Draw the structure of Polybutadiene Rubber. Explain its chemistry, properties and applications. **07**

(b) Draw the structure of Butyl rubber. Explain its chemistry and grades in detail. **07**

OR

Q. 5 (a) Explain about the requirement of third monomer in EPDM rubber. Draw the structures of EPDM terpolymer. **07**

(b) Draw the structure of Styrene Butadiene Rubber. Explain its chemistry, properties and applications. **07**
