Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEMESTER-IV • EXAMINATION – SUMMER-2015

Subject code: 142602 **Date: 03/06/2015**

Subject Name: Natural Rubber Science & Technology

Time: 10.30AM - 01.00PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q. 1 Answer the following. **(14)**

(i) Write the chemical name of Natural Rubber and draw its structure.
(ii) What do you mean by Diffusion mechanism?
(iii) Define and explain the term: "Powdered Rubber".
(iv) Draw the schematic diagram for Graft Co-polymer and write its advantage.
(v) Write the objective for chemical modification of Natural Rubber.
(vi) List the advantages and applications of Liquid Rubber.
(vii) What do you mean by Buckling?

Q. 2 (a) "Powdered rubber is more advantageous in adhesive applications than Bale rubber." Justify the statement. **(07)**

Q. 2 (b) Discuss about the manufacturing of Pale Crepe and write its advantages. **(07)**

OR

Q. 2 (b) Write about the influence of Non-Rubber Substances (NRS) on properties of Natural Rubber. **(07)**

Q. 3 (a) Give reaction mechanism for preparation of Reactive Polystyrene pre-polymer and explain it. **(07)**

(b) How modulus increase by applying Compression stress during low temperature Crystallization? Explain with the help of schematic diagram. **(07)**

OR

Q. 3 (a) List the basic parameters which affect the properties of Graft Co-polymer. Explain any two with graphical representation. **(07)**

(b) List the stages of low temperature Crystallization process and explain it in detail. **(07)**

Q. 4 (a) Discuss about the practical relevance of Diffusion process in Rubbers. **(07)**

(b) Give reaction mechanism for simple Substitution reactions of Olefinic double bond and explain it. **(07)**

OR

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Q. 4 (a) Draw the model for Diffusion of water in Rubber and explain the mechanism in detail. **(07)**

	(b)	What do you mean by Epoxidized Natural Rubber? Discuss its advantages and applications in detail.	**(07)**
Q. 5	**(a)**	Explain abut following terms: **(i)** Creep and Stress relaxation **(ii)** Hysterisis Loss	**(07)**
	(b)	Short note on Rubberized Asphalt.	**(07)**
		OR	
Q. 5	**(a)**	Explain the Load-Deflection characteristics for Bonded rubber components during application of Shear force.	**(07)**
	(b)	List the basic types of Reclaimed Rubber and explain it in detail.	**(07)**

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