Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V(New) • EXAMINATION – WINTER 2016

Subject Code:2152603 Date:17/11/2016

Subject Name:Textile & Metal Reinforcement of Elastomers

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.**

Q. 1	**Answer the following.**		**(14)**
	1	**List the basic types of Crimp.**	
	2	**Express the relation between Twist and Linear Density.**	
	3	**Define the term: "Cord"**	
	4	**Mention the unit to express peel strength.**	
	5	**List the various systems for Weft insertion during fabric production.**	
	6	**Give any one advantage and disadvantage of Knitting.**	
	7	**Write any two methods to achieve adhesion between Rubber and Textile.**	
	8	**What is Pick-count?**	
	9	**Which compounding ingredients adversely affect the adhesion?**	
	10	**How adhesion is obtained between Cotton fiber and Elastomer matrix?**	
	11	**Define the term : "Short fibre"**	
	12	**Give the difference between Fibre and Filament.**	
	13	**What do you mean by Industrial textile?**	
	14	**Name the two important chemicals used in synthesis of Polyester.**	
Q. 2	**(a)**	**List the Technical advantages and limitations of Kevlar Aramid fibre.**	**(03)**
	(b)	**Discuss about possible causes for failure at the Rubber-Cement interface.**	**(04)**
	(c)	**Explain in detail about Fibre Morphology.**	**(07)**
		OR	
	(c)	**Describe in detail about compounding of Short fibre materials.**	**(07)**
Q. 3	**(a)**	**Explain the term : "Frictioning"**	**(03)**
	(b)	**Derive the formula : Twist = tan θ / Π*d**	**(04)**
	(c)	**Describe the Wet Spinning process for production of Rayon.**	**(07)**
		OR	
Q. 3	**(a)**	**Explain the term : "Topping"**	**(03)**
	(b)	**Write about the effect of Twist directions on properties of fabric.**	**(04)**
	(c)	**Discuss about Melt Spinning technique for production of Nylon 66 with necessary reaction steps.**	**(07)**

……P.T.O……

Q. 4	**(a)**	**Decode the following by using Fabric designation system: "EbPb 100/50"**	**(03)**
	(b)	**Draw the schematic diagram showing the principle of Weaving.**	**(04)**
	(c)	**Classify the Non-Woven fabric according to method of production and explain about any one in detail.**	**(07)**

OR

Q. 4	**(a)**	**Name the simplest weave design in Woven fabric. Explain it in brief.**	**(03)**
	(b)	**Draw the schematic diagram showing Twister/ Cabler principle for single-end reinforcement.**	**(04)**
	(c)	**Discuss about different types of Stress Warp fabric structures and show their weave designs.**	**(07)**
Q. 5	**(a)**	**Why heat –setting treatment is necessary for synthetic yarns?**	**(03)**
	(b)	**Write in brief about T-peel test.**	**(04)**
	(c)	**Discuss about different Adhesive treatments for Rayon.**	**(07)**

OR

Q. 5	**(a)**	**Write about the effect of Humidity on Adhesion.**	**(03)**
	(b)	**How Peel test can be carried out for Multi-ply construction?**	**(04)**
	(c)	**Explain the basic principle of single-end Heat-setting treatment with the help of schematic diagram.**	**(07)**

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