Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEM-VIII EXAMINATION – SUMMER 2014

Subject Code: 182801 **Date: 05-06-2014**

Subject Name: Technology of Dyeing-III

Time:10:30am to 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	**(a)**	Derive an expression of Fick's second law of diffusion.	**06**
	(b)	Effect of substrate on direct dyeing of cellulose.	**04**
	(c)	Give a brief note on over reduction of vat dye.	**04**
Q.2	**(a)**	Explain with proper examples: Ionic, covalent and coordinate bonds	**07**
	(b)	Discuss in detail the various theories proposed to explain the dyeing of polyester with disperse dyes.	**07**
		OR	
	(b)	Explain the term approximate diffusion coefficient, its determination and significance.	**07**
Q.3	**(a)**	Discuss the concept of chemical potential and free energy. Explain the derivation of equation for measuring heats of dyeing.	**07**
	(b)	Discuss the concept of compatibility of dyes with suitable examples.	**07**
		OR	
Q.3	**(a)**	Describe various theories to study the thermodynamic aspects of direct dyeing of cotton.	**14**
Q.4	**(a)**	Discuss the effect of various parameters on equilibrium adsorption direct dye cellulose.	**10**
	(b)	Explain: Maximum dye combining power of wool.	**04**
		OR	
Q.4	**(a)**	Describe various thermodynamic aspects of reactive dyeing of cotton.	**14**
Q.5	**(a)**	Describe the importance of soaping of vat dyes.	**10**
	(b)	Explain the term, "optimum temperature of a dye".	**04**
		OR	
Q.5	**(a)**	Discuss "Electrical phenomenon in dyeing". Explain, with proper illustration, how the distribution of ionic species can be studied using the concept of "Donnan membrane equilibrium".	**14**

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