Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-VIII Examination May 2012

Subject code: 182801

Subject Name: Technology of Dyeing-III

Date: 10/05/2012 **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)**	Answer the following objective questions	**10**
	i.	Diffusion of basic dye in acrylic fibre follows ----------mechanism.	
	ii.	Polyester dyeing follows ---------- adsorption isotherm.	
	iii.	Amino end group of nylon 66 is ---------- gm.eq./kg of fibre.	
	iv.	Enolization is associated with ----------linkages.	
	v.	Which law of diffusion is applicable to normal dyeing system?	
	vi.	What is an equilibrium dyeing?	
	vii.	Affinity of dyes can be determined from change in entropy-TRUE or FALSE? Correct if false.	
	viii.	Give the names of reversible dyeing systems.	
	ix.	What is Lewis acid?	
	x.	Dyeing is an endothermic process, TRUE or FALSE? Correct if false.	
	(b)	Discuss the concept of compatibility of dyes.	**04**
Q.2	**(a)**	Give a brief account on the importance of cohesive energy density and solubility parameter of disperse dye- polyester system	**10**
	(b)	Explain the Remington and Glodil's theory.	**04**
		OR	
	(b)	Explain the Maggle's theory of nylon dyeing	**04**
Q.3	**(a)**	Give a critical review on dyeing of acrylic fibres with basic dyes.	**10**
	(b)	Explain the importance of temperature on dyeing of acrylic fibres.	**04**
		OR	
Q.3		Describe various thermodynamic aspects of reactive dyeing of cotton.	**14**
Q.4	**(a)**	With examples, explain the applicability of Freundlich and Langmuir isotherms in study of dyeing system.	**10**
	(b)	Explain the concept of Entropy of dyeing.	**04**
		OR	
Q.4		State the equation for Fick's first law of diffusion. Define diffusion coefficient with units. Derive an expression for Fick's second of diffusion.	**14**
Q.5	**(a)**	Describe various physicochemical and thermodynamic aspects of azoic dyes on cellulose.	**10**
	(b)	Give a brief note on over reduction of vat dye.	**04**
		OR	
Q.5	**(a)**	Explain: Activation energy of diffusion.	**05**
	(b)	Explain: Electrical phenomenon of dyeing.	**05**
	(c)	Explain: Maximum dye combining power of wool.	**04**

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