

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2017****Subject Code: 2182801****Date: 29/04/2017****Subject Name: Technology of Dyeing - III****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** (a) Explain the Freundlich isotherm in detail. **07**
 (b) Explain the term approximate diffusion coefficient, its determination and significance. **07**
- Q.2** (a) Explain the interaction of different acid dyes with suitable substrate. **07**
 (b) Derive an expression of Fick's second law of diffusion. **07**
- OR**
- (b) Derive an expression of Fick's first law of diffusion. **07**
- Q.3** (a) Give a brief account on different types of Van der Waals' forces. **07**
 (b) Discuss the concept of chemical potential and free energy. Explain a derivation of equation for measuring heats of dyeing. **07**
- OR**
- Q.3** (a) Discuss the Peters and Vickerstaffs' theory for dyeing of cotton with direct dye. **07**
 (b) Explain: Activation energy of diffusion and Half dyeing time. **07**
- Q.4** (a) Explain elaborately various techno-physical aspect of soaping of vat dyed textile material. **07**
 (b) Explain: Donnan theory of membrane equilibrium. **07**
- OR**
- Q.4** (a) State different theories proposed for dyeing of nylon. Describe Peters' theory in detail. **07**
 (b) Discuss the dyeing of wool with acid dyes. **07**
- Q.5** (a) Discuss how the rates of reactivity study are crucial in deciding the suitability of reactive dye. **07**
 (b) Discuss the adsorption behavior of azoic coupling component as a function of presence of alkali. **07**
- OR**
- Q.5** (a) Explain the concept of Entropy of dyeing. **04**
 (b) Explain: Maximum dye combining power of wool. **03**
 (c) Explain: Electrical phenomenon of dyeing. **07**
