

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**
