B. Tech.

(SEM. VI) EXAMINATION, 2006-07

CHEMISTRY OF DYEING

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions. All questions carry equal marks.

1. Attempt any one part of the following :
   (a) Explain the relevance of the following in relation to textile dyeing :
       (i) Vanderwaal’s forces.
       (ii) Ionic forces.
       (iii) Hydrogen Band
       (iv) Co-valent band
   (b) Explain the following factors that affect the rate of dyeing :
       (i) Effect of change in pH
       (ii) Effect of change in temperature
       (iii) Effect of boiling in soap in reactives dyeing
       (iv) Effect of fixing agents
2. Attempt any one part of the following:
   (a) Explain with suitable illustration the “absorbing” and adsorbing behaviour of material fibres with dyeing.
   (b) Describe and explain the equation postulated by Kublek Munk as given below:

   \[ \frac{K}{S} = \frac{(1 - R)^2}{2R} \]

   Assuming suitable values, explain the utility of the above equation.

3. Explain any one of the following with suitable examples from your practical classes explain the following:-
   (a) Role of fibre structure in dyeing
   (b) Role of dye structure in dyeing textiles.

4. Explain the following with suitable examples.
   (a) The equipment features, principle and working of a simple spectrophotometer.
   (b) The features and working of an UV transmitter type spectrophotometer.

5. Attempt any one part of the following:
   (a) With suitable line sketch explain the principle and working a Reflectance type spectrophotometer.
   (b) Explain the following terms:
      (i) Colour metamerism
      (ii) Development of time-temperature gradient to communicate methods of dying.
      (iii) Troubleshooting in colour calibration.
      (v) Colour differences.