



SF-7877

B. E. - IV (Sem. VIII) (TP) Examination

May / June - 2011

Technology of Dyeing - III

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
B. E. - 4 (Sem. 8) (TP)

Name of the Subject :
Technology of Dyeing - 3

Subject Code No. : 7 8 7 7 Section No. (1, 2,.....) : 1&2

Seat No. :
[] [] [] [] [] []

Student's Signature

- (2) Answers to the two sections must be written in same answer book.
(3) Figures to the right indicate full marks.

SECTION - I

- 1 (a) Answer the following objective questions. 10
- Name the three thermodynamic quantities used for study of dyeing systems.
 - Expand CED to its full form.
 - Interlacing of wool is known as _____.
 - Homopolar bonds are formed by _____ of electrons.
 - What is an infinite dye bath ?
 - Give reason why oxy cellulose takes up less direct dye than normal cotton.
 - Levelling acid dyes are characterized by _____ affinity.
 - Electron acceptors are known as _____ acids.
 - Nernst's isotherm is of better use in study of ionic dyeing systems, true or false ? Correct if false.
 - Give in ascending order the effectiveness of various cat ions as an exhausting agent in direct dyeing of cotton.
- (b) Describe thermodynamic aspects of vat dyeing of cotton. 10

- 2 (a) Discuss the concept of activation energy of diffusion with its application in classical studies of dyeing. 10
(b) Describe Peter's theory of nylon dyeing. 5

OR

- 2 Name the laws used in studies of kinetics of dyeing. 15
Define steady state and non steady state dyeing systems.
Derive an expression for determination of diffusion coefficient of a dye in non steady state dyeing
- 3 Write short notes on any three of the following : 15
(a) Langmuir Isotherm
(b) Dyeing of polyester with disperse dyes
(c) Over reduction of vat dye
(d) Van der Waal's forces.

SECTION - II

- 4 (a) Answer the following objective questions : 10
(i) Semi polar bonds are popularly known as _____ bonds.
(ii) Mention three steps of kinetics of dyeing.
(iii) Why the diffusion of dye within the fibre is much slower ?
(iv) When the two dyes are said to be compatible ?
(v) _____ dyeing system follows Langmuir isotherm.
(vi) What is meant by an equilibrium dyeing ?
(vii) Give an expression showing relationship between activation energy of diffusion and diffusion coefficient.
(viii) What is main difference between Fick's first law and second law ?
(ix) The maximum dye combing power of wool is _____ gm.eq./kg of fibre.
(x) Garvie and Neale carried out experiment for determination of diffusion coefficient in _____ state.
- (b) Describe various physiochemical and thermodynamic aspects of azoic dyes on cellulose. 10

5 Explain the concept of Donnan membrane equilibrium and justify its significance in study of dyeing systems. **15**

OR

5 Describe various theories to study the thermodynamic aspects of direct dyeing of cotton. **15**

6 Write short notes on any **three** of the following : **15**

- (a) Garvie and Neal's Experiment
 - (b) Importance of soaping of vat dyed fabric
 - (c) Rate of dyeing and half dyeing time
 - (d) Compatibility of dyes
-