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B.TECH.**THEORY EXAMINATION (SEM-IV) 2016-17****PHYSICAL CHEMISTRY OF DYEING****Time : 3 Hours****Max. Marks : 100****Note :** Be precise in your answer. In case of numerical problem assume data wherever not provided.**SECTION-A****1 Explain the following: (10×2=20)**

- What do you mean by substantively in terms of dyeing?
- Define the term affinity in dye fibre system.
- What do you mean by EDL and diffuse layer?
- What do you mean by zeta potential?
- Write down the names of types of isotherm.
- What is lamberts law?
- What is beers law?
- What do you mean by chemical potential
- What is entropy of dyeing and its units?
- How many types of isotherm applicable in dyeing?

SECTION-B**2 Attempt any five of the following: (10×5=50)**

- What do you understand by absorption? Discuss the law related to light absorption. How wavelength affects the absorption?
- How instrumental errors and changes in solution show the significance of Beers law?
- How does the structure of cellulosic fibers and protein fibers affect the dyeing process? Support your view with suitable examples.
- In which form the results of equilibrium dyeing measurement are usually expressed? Explain the equation resulting the measuring of equilibrium of dyeing.
- Discuss the electrical effects in dyeing equilibrium.
- What is chemical potential? How it is responsible in dyeing of textile fibers with dyes?
- Give the methods of measuring diffusion coefficient in the fiber.
- What is the effect of temperature on rate of dyeing?

SECTION-C**Attempt any two of the following: (15×2=30)**

- Describe the thermodynamic quantities of dyeing process. Also describe the entropy of dyeing.
- Discuss dyeing rate and its limitations. Also discuss the dyeing rate under conditions of equal affinity.
- With the help of pore model and free volume model explain the theories of dyeing.