

[66]

SARDAR PATEL UNIVERSITY
M.Sc. (ORGANIC CHEMISTRY), Semester - III, Examination
Tuesday, 17th April 2018
PS03ECHE01 - SYNTHETIC DYES AND PIGMENTS

Time: 02:00 pm To 05:00 pm

Maximum Marks-70

Q.1 Select the correct answer from the option given below for each of the following questions. [08]

Write **ONLY ANSWERS** in the provided answer book. [e.g. Q.1 (1)-(b)]

1. Which of the following is white inorganic pigment?
 - a) Titanium dichloride
 - b) Tin oxide
 - c) Titanium dioxide
 - d) None of these
2. Theaflavin gallate is responsible for the color of _____.
 - a) Hair
 - b) Tea
 - c) Henna powder
 - d) Charcoal
3. The difference between a dye and pigment is that a dye:
 - a) is held on the surface of the fiber by a resin.
 - b) is an inorganic chemical that permeates fibers.
 - c) usually diffuses into the interior of a fiber from water solution.
 - d) lays on the surface of the fiber.
4. The auxochrome chemical group of a dye:
 - a) is a color producing group of the dye.
 - b) influences the intensity of the dye.
 - c) act as a mordant.
 - d) is a metallic ion that attaches to fiber.
5. Which of the following is the photosensitizing dye?
 - a) Aurin
 - b) Methylene blue
 - c) Aniline blue
 - d) Kryptocyanine dye
6. A Vat dye _____.
 - a) must be reduced to a soluble form so that it can dissolve in the dye bath and get trapped in the cellulose fiber
 - b) penetrate both the outer ring and the inner core of a piece of fiber
 - c) remains in its soluble form inside the denim fabric
 - d) must be in an insoluble form so that it can get trapped in the cellulose fiber.
7. The colorant present in litmus paper is _____.
 - a) Erythropterin
 - b) Erythrolitmin
 - c) Threopterin
 - d) Threolitmin
8. Which of the following bond form between reactive dyes and wool?
 - a) π -bond
 - b) Covalent bond
 - c) $d\pi$ - $p\pi$ bond
 - d) Triple bond

Q.2 Answer **ANY SEVEN** of the following

[14]

1. Justify: "As number of conjugation increases color of the dye deepens."
2. Enlist the dyes which used as an indicator with their structure.

3. Explain the use of synthetic organic pigment.
4. Give the synthesis of Malachite green and Congo red.
5. Write a short note on pre-treatment of textile fibers.
6. Discuss: Donor-acceptor chromophore.
7. Write a short note on leather dye.
8. Explain: Cyanine type chromophore.
9. Give the synthesis: Tinopal BV and Palanil White.

Q.3

(A) Explain: Molecular orbital theory and Valance bond theory with respect to dyes. [06]

(B) Give synthesis of the followings: [06]

- 1) Direct Black 38 2) Crystal Violet 3) Alizarin

OR

(B) Classify dyes according to their mode of Application. [06]

Q.4

(A) Write a short note on: 1) Medicinal dyes 2) Food dyes [06]

(B) Explain type of fibers and basic operations used in dyeing processes. [06]

OR

(B) Explain different types of printing techniques used for textile printing. [06]

Q.5

(A) Outline the mechanism of Dye sensitized solar (DSC) cell. [06]

(B) Write a Brief note on Near Infrared Absorption (NIR) Dyes; Introduction, approach to achieve NIR dyes and applications. [06]

OR

(B) Write a short note on: Photo sensitizer for photodynamic therapy [06]

Q.6

(A) Explain: Modern high grade pigments and lack of acids. [06]

(B) What is FBA? Write its characteristics and give synthesis of any two fluorescent brightening agents. [06]

OR

(B) Explain the following: [06]

1. Metal complexes of pigments.
2. Color and constitution relationship in azoacetanilide pigment with suitable example

————— x —————