Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD (now MoE)
Re-accredited with 'A++' Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Continuous Internal Assessment Test I – February 2025
Semester-II

Class : IPG **Time: 2 hour**
Major : Chemistry **Max. Marks: 60**

23MCHC07 Organic Chemistry-II

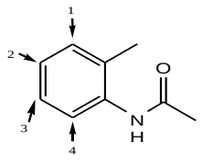
Course Outcomes

1. Molecular orbital symmetry and be able to evaluate concerted reactions via FMO and PMO approach, electrocyclic reactions, cycloadditions and sigmatropic rearrangements
2. Photochemical reactions of alkenes, carbonyl and aromatic compounds Identify the mechanism of various photochemical reactions
3. Able to predict the stereochemistry and mechanism of addition and elimination reactions
4. Assess the mechanism and reactivity of electrophilic substitution reactions
5. Expertise in identifying the transformations, the reagents and planning organic synthesis

Part A

Choose the correct answer **6 x 1 = 6**

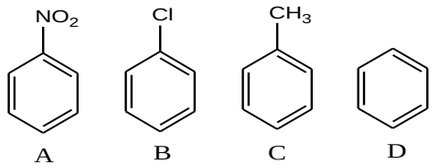
1. CO4K2



Sulphonation is most favourable at the carbon

a. 1 b. 2 c. 3 d. 4

2. Correct order of rate of electrophilic aromatic substitution of the following compounds is



CO4K2

a. C>B>A>D b. C>D>A>B c. A>B>C>D d.C>D>B>A

3.Which of the following statements about electrophile is not true? CO4K2

a.Electrophiles are positively or negatively charged species with vacant orbitals
b.The most electron-populated part of a nucleophile attacks electrophiles
c.Carbenes and nitrenes are examples of chemical electrophiles
d.Electrophiles are lewis base

4. When an alkene is subjected to treatment with $Hg(OAc)_2$ in alcohol, followed by reaction with $NaBH_4$, What functional group is formed? CO3K1

a. ether b.epoxide c. alkane d. syndiol

5. What happens during a Norrish Type I reaction when a molecule is exposed to UV light?

a. The molecule breaks carbon-carbon bonds.
b. The molecule gains electrons.
c. The molecule rearranges to form different products.
d. The molecule absorbs heat energy. CO1K1

6. If the atomic orbitals at the end group rotate in the same direction either clockwise or anticlockwise the rotation is said to be -------- CO1K2

a. disrotatory b. conrotatory c. chelotropic d. pericyclic reactions

Part B **3 x 6 = 18**

Answer ALL questions
Each answer should not exceed 400 words or two pages

7.a. Why pyridine is less reactive towards electrophilic substitution reaction? CO4K3

(or)

7.b. Sketch the mechanism of Reimer Tiemann reaction. CO4K2

8.a. Illustrate oxidation of alkene using Osmium tetroxide CO3K2

(or)

8.b. Toluene reacts faster than nitrophenol. Justify CO4K3

9.a. Illustrate Jablonski diagram CO1K2

(or)

9.b. Give the symmetry properties of 1,3 butadience and Ethylene CO1K2

Part C **3 x 12 = 36**

Answer ALL questions

Each answer should not exceed 800 words or four pages

10.a. Explain the orienting effect of –CN group on the course of the electrophilic substitution in the aromatic ring. CO4K3

(or)

10.b. How will you correlate structure and activity in aromatic compounds explain. CO4K2

11. a.Account for the following observations. CO4K2

(i) Halogens are ring deactivators but o,p directing (ii) Naphthalene undergoes electrophilic substitution preferentially at α position

(or)

11.b. Illustrate the following reactions with examples. (i)Ozonolysis (ii)Addition of $KMnO_4$ across oxygen CO3K2

12. a. Explain the Photochemistry of Vision and Photo Fries reaction CO1K2

(or)

12. b. Give an example for Norrish type II reaction. CO1K2

Give an example for Norrish type I reaction of cyclic saturated ketones.

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