

TAMRALIPTA MAHAVIDYALAYA

Department of Chemistry

UG First Semester Class Test-I :: Session : 2023-24

Course: CHEMISTRY (H)

Course Code: CEMHMJ101

Paper – Major 1 (Organic Chemistry) Date: 21-09-2023 (Thursday)

Name of Teacher: Dr Satyajit Dey

Full Marks: 10

Time: 20 Minutes

Name of Student:

Roll:

No:

Tick (✓) the correct answer on the question paper and submit

1 x 10 = 10

Q1. Which of the following statements regarding nucleophilicity is wrong?

- a) Ethoxide ion is more nucleophilic than *t*-butoxide in spite of its lower basicity.
- b) Ethoxide ion is more nucleophilic than *t*-butoxide due to the lower steric hindrance.
- c) Chloride ion is more nucleophilic than iodide ion because of its higher basicity.
- c) Bromide ion is more nucleophilic than fluoride in spite of its lower basicity.

Q2. The order of decreasing stability of the following cations is?

(I) $\text{CH}_3\text{C}^+\text{HCH}_3$ (II) $\text{CH}_3\text{C}^+\text{HOCH}_3$ (III) $\text{CH}_3\text{C}^+\text{HCOCH}_3$

- a) III > II > I
- b) I > II > III
- c) II > I > III
- d) I > III > II

Q3. Which of the following is most reactive as a nucleophile?

- a) PhO^-
- b) PhS^-
- c) PhCH_2O^-
- d) PhCH_2NH_2

Q4. Which bond is likely to break by homolysis?

- a) C-H
- b) C-Cl
- c) H-Cl
- d) H-O

Q5. Heterolysis of a 'C-C' covalent bond form:

- a) Free radicals
- b) Carbanions only
- c) Carbocations only
- d) Both carbocations and carbanions

Q6. Which is an electrophile?

- a) H_2O
- b) NF_3
- c) SO_3
- d) NH_4^+

Q7. What type of reactive intermediate contains a positive charge, and reacts readily with negative species in the chemical reaction?

- a) Free radical
- b) Carbocation
- c) Carbanion
- d) Carbene

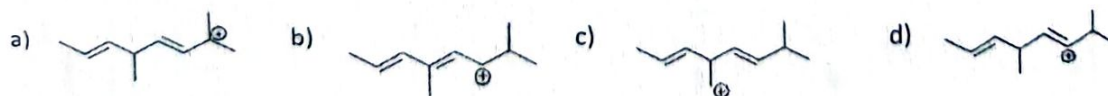
Q8. Choose the correct statement of the following:

- 1) the carbon atom of a carbonium ion is sp^2 hybridized with an empty p Orbital.
 - 2) The order of carbocation stability is: $\text{Me}_3\text{C}^+ > \text{Me}_2\text{CH}^+ > \text{MeCH}_2^+ > \text{Me}^+$
 - 3) The carbocation has a flat structure with a bond angle of $109^\circ 5'$ between them.
 - 4) hyperconjugation and resonance are the important factor in deciding stability of carbocations.
- a) 1, 2 & 4
 - b) 2, 3, & 4
 - c) 2 & 4
 - d) 1 & 4

Q9. The formation of a single product from two reactant molecules is known as

- A) addition reaction
- B) elimination reaction
- C) substitution reaction
- d) oxidation

Q10. The most stable carbocation is:



Signature 21/09/2023