

Subject: Chemistry

Paper name: Organic Chemistry - I

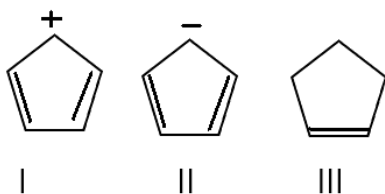
Paper No: II (CHEM/2/CC/121)

Semester: II

A. Multiple choice questions

1. The + I effect group among the following is
 - (a) $-\text{NO}_2$
 - (b) $-\text{CN}$
 - (c) $-\text{COCl}$
 - (d) $-\text{R}$
2. The most stable among the following organic intermediate carbocation is
 - (a) primary carbocation
 - (b) secondary carbocation
 - (c) tertiary carbocation
 - (d) all of the above
3. Boiling point of intramolecular H-bonding is
 - (a) higher boiling point than intermolecular H- bonding compounds
 - (b) lower boiling point than intermolecular H- bonding compounds
 - (c) similar boiling point as intermolecular H- bonding compounds
 - (d) none of above
4. Reagent which have unshared pair of electron is known as
 - (a) electrophile
 - (b) nucleophile
 - (c) free radical
 - (d) none of the above
5. Single electron movement in organic reaction mechanism represent by
 - (a) double headed arrow
 - (b) single headed arrow
 - (c) double headed curved arrow
 - (d) single headed curved arrow

6. The C-C bond length in benzene is
- (a) shorter than the C-C bond length in ethylene
 - (b) longer than the C-C bond length in ethane
 - (c) intermediate between C-C bond length in ethane and C-C bond length in ethylene
 - (d) same as that of C-C bond length in ethylene
7. Side chain halogenations takes place by
- (a) electrophilic substitution mechanism
 - (b) nucleophilic substitution mechanism
 - (c) electrophilic addition mechanism
 - (d) free radical mechanism
8. Stability of benzene is explained by
- (a) conjugated systems of alternating double and single bonds in benzene system
 - (b) all six p orbitals are used in the benzene π system
 - (c) reaction with KMnO_4
 - (d) all of the above
9. Identify the correct statement which is related to aromatic hydrocarbon
- (a) It has only sigma bonds
 - (b) It has only pi bonds
 - (c) It has a sigma and delocalized pi bond
 - (d) none of the above
10. Which of the following compounds is aromatic?



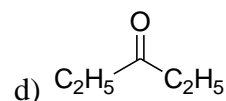
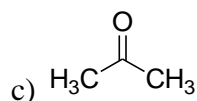
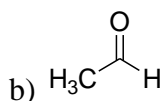
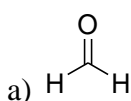
- (a) I and II
 - (b) I and III
 - (c) Only II
 - (d) All
11. The increasing order of acidity among phenol and its derivatives are

- (a) Phenol < p-Nitrophenol < p-Cresol
- (b) p-Nitrophenol < p-Cresol < phenol
- (c) p-Nitrophenol < Phenol < p-Cresol
- (d) p-Cresol < Phenol < p-Nitrophenol

12. The reaction of Acetaldehyde with HCN to form cyanohydrin is an example of

- (a) Electrophilic addition
- (b) Nucleophilic addition
- (c) Nucleophilic substitution
- (d) Elimination

13. Among the following, the most reactive carbonyl compound towards nucleophile is:



14. The reactive intermediate involved in Reimer-Tiemann reaction is

- (a) Carbanion
- (b) Carbocation
- (c) Free radicals
- (d) Carbene

15. Ortho-substituted benzoic acids irrespective of its electron donating or withdrawing nature are

- (a) Weaker acids than benzoic acid
- (b) Stronger acids than benzoic acid
- (c) No effect
- (d) None of these

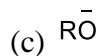
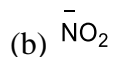
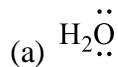
16. The basicity order of the following amine is

- (a) aniline > m-nitroaniline > p-nitroaniline > o-nitroaniline
- (b) m-nitroaniline > p-nitroaniline > o-nitroaniline > aniline

- (c) p-nitroaniline > o-nitroaniline > m-nitroaniline > aniline
(d) aniline > p-nitroaniline > o-nitroaniline > m-nitroaniline
17. Schiff's base can be obtained by reacting 1°-amine with
- (a) Carboxylic acid
 - (b) Alcohol
 - (c) Aldehyde
 - (d) Cyanide
18. Secondary amine reacts with nitrous acid to form
- (a) Alcohol
 - (b) N-Nitrosoamine
 - (c) Nitrite salt
 - (d) N, N-Dinitrosoamine
19. The basicity order of the following is
- (a) $C_6H_5NH_2 < NH_3 < CH_3NH_2$
 - (b) $C_6H_5NH_2 < CH_3NH_2 < NH_3$
 - (c) $NH_3 < C_6H_5NH_2 < CH_3NH_2$
 - (d) $NH_3 < CH_3NH_2 < C_6H_5NH_2$
20. Carbylamine test is a confirmatory test for
- (a) Primary amine
 - (b) Secondary amine
 - (c) Tertiary amine
 - (d) Both primary and secondary amine
21. S_N2 reaction takes place with
- (a) Strong nucleophile and 1°-alkyl halide
 - (b) Weak nucleophile and 3°-alkyl halide
 - (c) Racemisation
 - (d) Two steps
22. A concerted reaction is one where the
- (a) reaction occurs in a series of steps
 - (b) reaction occurs in a single step
 - (c) reaction occurs with large threshold energy

(d) energy of reactant is higher than the product

23. Which of the following is an ambident nucleophile?



24. $\text{S}_{\text{N}}1$ reaction is favoured by

(a) polar aprotic solvent

(b) primary alkyl halide

(c) polar protic solvent

(d) strong nucleophile

25. According to Saytzeff rule, the major product in elimination reaction is

(a) less substituted alkene

(b) more substituted alkane

(c) less substituted alcohol

(d) more substituted alkene

B. Fill up the blanks

1. The movement of electrons in organic reactions can be shown by _____ notation.
2. Electromeric effect is a temporary effect and it shows in organic compounds having a multiple bond in the presence _____ reagent only.
3. Hyperconjugation interaction in $(\text{CH}_3)_3\text{C}^+$ is _____ than in CH_3CH_2^+ .
4. Aryl chlorides and bromides can be prepared by electrophilic substitution of arenes with chlorine and bromine respectively in the presence of _____.
5. All the six carbon atoms in benzene are _____ hybridized.
6. Hückel rule satisfy the presence of _____ p electrons in the ring and where n is an integer ($n = 0, 1, 2, \dots$).
7. The hybridization state of carbonyl carbon in aldehyde and ketone is _____ hybridised.
8. Phenol is _____ acidic than ethyl alcohol.

9. In Kolbe-schmidt reaction, phenoxide ion reacts with CO_2 to give _____ .
10. $\text{S}_{\text{N}}2$ reaction proceeds with _____ of configuration.
11. $\text{E}1$ reaction is favoured by _____ alkyl halide.
12. A reaction where more of one constitutional isomer is formed than the other is called a _____ reaction.

Key Answers

A. Multiple choice questions

1. (d)
2. (c)
3. (b)
4. (b)
5. (d)
6. (c)
7. (d)
8. (d)
9. (c)
10. (c)
11. (d)
12. (b)
13. (a)
14. (d)
15. (b)
16. (a)
17. (c)
18. (b)
19. (a)
20. (a)
21. (a)
22. (b)
23. (b)

24. (c)

25. (d)

B. Fill up the blanks

1. Curved arrow

2. attacking

3. more

4. FeCl_3

5. sp^2

6. $4n+2$

7. sp^2

8. more

9. salicylic acid

10. inversion

11. tertiary

12. regioselective