Department of Chemistry

B.Sc.I (Sem II) Question Bank BCT 201

Course name: Organic Chemistry

Que.1 Answer the following:

1) Explain Saytzeff Rule?
2) Discuss any two methods of preparation of alkene?
3) Define the terms i) chiral carbon ii) racemic mixture
4) Define the term geometrical isomerism with suitable example
5) Define homolytic and heterolytic bond fission with suitable example?
6) Define the terms i) external compensation ii) Internal compensation?
7) Define Nitrene intermediate with suitable example?
8) Discuss any two factors affecting on stability of carbocation?
9) Discuss any two factors affecting on stability of carbanion?
10) Explain any two methods of preparation of alkyne?
11) Discuss any two factors affecting on stability of free radical?
12) Discuss any two methods of preparation of carbocation?
13) Discuss any two methods of preparation of carbanion?
14) Discuss any two reactions of nitrene?
15) Discuss any two reactions of free radical
16) Discuss any two applications of free radical reaction?

17) Define Enantiomers and Diastereomers?

18) Define free radical intermediate with suitable example?

19) Explain in brief Markonikoff addition rule?

20) Define benzyne intermediate? Draw the structure of benzyne intermediate?

21) Define plane of symmetry with suitable example?

22) Explain Diels Alder reaction for formation of alkene?

23) Define alternating axis of symmetry with suitable example?

24) Define carbene with suitable example?

25) Explain reactions of cycloalkane?

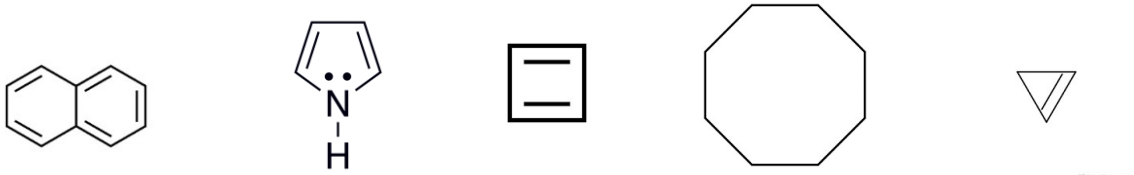
Que2. Attempt the following

1. What are carbocation? How they are formed? Give structure, stability and reactions of carbocation?
2. Explain optical isomerism in tartaric acid?
3. Discuss the mechanism of Electrophilic substitution reactions of Benzene? Explain various electrophilic reactions of benzene?
4. Explain optical isomerism in 2, 3 dihydroxy butanioic acid?
5. Define carbanion? How they are formed? Give structure , stability and reactions of carbanion ?
6. Define free radical? How they are formed? Give structure , stability and reactions of free radical ?

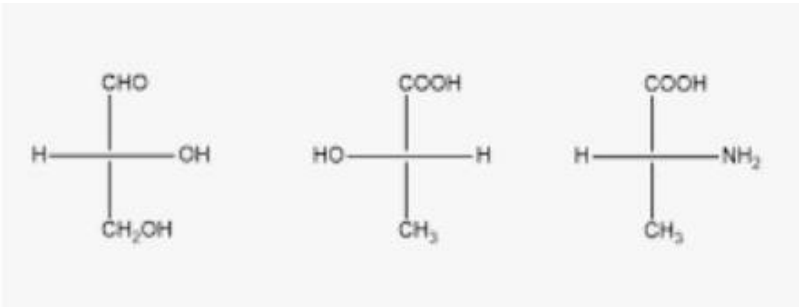
7. Explain formation and reactions of nitrene and carbene intermediate?
8. Explain configuration of aldoximes and ketoximes?
9. Explain formation, reaction and applications of free radical?

Que 3. Attempt the following

1) Explain Beckmann transformation (B.T.)?
2) Discuss general methods of formation of alkenes? iii) On the basis of Huckel's rule classify the following species as aromatic, nonaromatic and ant aromatic with reason?



3) Explain applications of free radical reactions?
4) Discuss structure stability and formation of carbanion?
5) Assign R or S and E or Z configuration to the following compounds?



6) Discuss general methods of formation of alkanes?
7) Explain mechanism of free radical reactions?
8) Discuss effect of activating and deactivating groups in aromatic substitution?
9) Explain aromaticity of benzene anthracene and phenanthrene by applying Hukel's rule?

10) Explain ortho para and meta orientation of substituted benzene with suitable example?
11) Explain elements of symmetry with suitable examples?
12) Explain molecular orbital structure of benzene?
13) Explain insertion and addition reactions of carbene?
14) Explain why Benzene undergoes electrophilic substitution reaction?
15) Discuss the resonance structure of benzene?
16) Define aromatic ant aromatic , nonaromatic Pseudo-aromatic compounds with suitable example?
17) Explain various methods of preparation of cyclo alkanes?
18) Explain various methods of preparation of cyclo alkenes?
19) Explain various methods of preparation of alkynes?
20) Explain in brief geometrical isomerism?
21) Discuss the reactive intermediate benzyne with respect to its structure, generation methods, stability and chemical reactions.
22) What are cycloalkanes? How they named? Explain the preparation methods
23) Explain cis and trans isomerism with suitable example?
24) Discuss various types of organic reactions?
25) State with reasons whether the following compounds show geometrical isomerism or not i) (CH3)2C=CHOH ii) CH3-CH=CH-CH3 iii) CH3-CH=CH2 iv) Cl2-C=CH-CH3
26) Draw the possible stereoisomers of the following and assign configuration of each of them
    i) CH3-CH-OH-CH3 ii) C6H5-CH-NOH
    ii) CH3-CH-C-Cl-C2H5 iv) CH3-CH2-CH-Cl_CH3
    v) Ch3-CH-NOH

27) Explain the terms with suitable example i) enantiomers ii) mesotartaric acid iii) cis isomerism iv) trans isomerism v) racemic mixture

28) Give methods of synthesis of nitrene and benzyne intermediate?

29) Explain in brief configuration of ketoxime?

30) What is R and S nomenclature give priority of groups ?

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Department of Chemistry

B.Sc.I (SEM -II)

BCT 202 Analytical chemistry

Question Bank

1) Define the terms Basicity of Acid.

2) Define underground water with suitable example.

3)Name some chromatographic techniques.

4)Name different types of condensers used in distillation.

5) Define equivalent weight and terms.

6) Define percentage composition by weight and volume .

7) Define the terms a) Normality. b) Molality

8)Define the terms gram molecular weight .

9) Give the applications of paper Chromatography

10) What is steam distillation? When is it used ?

11) Give the Applications of paper chromatography.

12) Define the chemical oxygen demand.

13)Define equivalent weight and terms.

14)Define filtration? when it is used.

15) Define Hardness with suitable example.

16) Define Biochemical oxygen demand .

17)Give the Type of condensers

18) Define is Recrystallization.

19) Define is sublimation.

20) what is filtration and crystallization.

21)Application of paper chromatography .

22) Give the Advantages of TLC .

23) Write the Heterogeneous techniques chromatography.

24) Define Dissolved Oxygen.

25) Define Hardness water .

Q.2 :long question

1)Explain the Chemical methods used for sterilization and gives disadvantages of its .
2)What is Distillation? Explain any two methods of distillation.
3)Describe the principle,methodology & applications of paper chromatography.

4)Describe the principle methodology and applications of Thin layer chromatography.
5)What is Distillation? Explain any two methods of distillation.
6) I) Explain the terms Basicity of Acid and Acidity of Base.

II) Calculate the normality and molarity of H_2SO_4. when 9.8 gm of H_2SO_4 are dissolved in 1dm^3 of solution (Eq. Wt of H_2SO_4 = 49 and Mol. Wt of H_2SO_4 = 98)

7) A solution contains 50% water, 50% ethyl alcohol by mass. Calculate the mole fraction of each component in the solution.

8) 40g of solution is dissolved in 1000g of solvent. Calculate the weight per cent of solute.

9) Explain, saturated, unsaturated and supersaturated solution.

10) Explain in brief Softening of water by ion exchange method.
11) Discuss Filtration as the purification technique. What are its limitations 12) Explain in brief classification of chromatography
13) Explain in brief Water for industry.
15) Explain in brief Main quality characteristics of water.
16) Explain the technique of fractional distillation.

Q. 3) Short Notes

1) Explain steam distillation technique

2) short notes on vacuum distillation.

3) Explain in detail Ion exchange chromatography.

4) A solution is prepared by mixing 46g of alcohol (C_2H_5OH) & 18g of water (H_2O).Calculate the mole fractions of components in the solution.

5) Explain in brief Sources of water.

6) what is common ion effect? Explain with example.

7) Explain the technique of Recrystallization

8) Define pH & pOH.Derive relationship between pH & pOH

9) Explain electrolytes with suitable examples.

10) Define buffer solution .Explain the terms. a) Acidic Buffer Solution
b) Basic Buffer Solution

11) Explain in brief Source of water

12) Define electrolyte and Explain the various types of electrolyte

13) What is the normality of a solution of sodium hydroxide containing 10×10^{-3} kg of dissolved in two dm^3 of water.

14) Explain in brief potability of water.

15) Explain electrolytes with suitable examples.

16) Draw a labeled diagram of simple distillation.

17) Name different types of condensers used in distillation.

18) Explain different types of condensers used in distillation.

19) Explain in detail sources of water.

20) Explain with suitable examples Turbidity.

21) Explain in brief potability of water.

22) Name different types of condensers used in distillation.

23) Short note of vacuum distillation.

24) What are characteristics of potable water?

25) Explain with suitable examples Hydrogen ion concentration.

26) Short notes Unit of hardness water.

27) Short notes Biological oxygen demand.

28) what are polar and non polar solvents?

29) Explain purification technique of sublimation .

30) Short notes Dissolved oxygen.