

Question bank

B.sc – I Organic Chemistry (paper II)

SEMESTER I

Que 1 :- Choose most correct alternative from among those given below.(10Marks).

- 1.The movement of electrons in hemolytic bond fission is shown by -----arrow
a) single headed b)double headed
c) reversible d)None of these
- 2.Hetrolytic bonds fission Yields -----
a)Pair of free radicals b) Pair of cations
c)Pair of anions c)one cations & one anions
3. Fission of carbon bond by hemolytic cleavage yields -----
a)Carbanion b)Carbocation
c)Carbon free radical c)either a or b
- 4.Electrophiles are -----
a)electron loving b)electron hating
c)nucleus hating c)nucleus loving
- 5.The nucleophiles reagents amongst the following species is -----
a)AlBr₃ b)BF₃
c)ZnCl₂ d)R-OH
- 6.The nucleophile is -----species
a)electron rich b)electron donor

c) Nucleophilic d) all of these

7. Identify most stable carbocation among the following -----

a) Ethyl carbocation b) Methyl carbocation

c) Diphenyl methyl carbocation d) t-butyl carbocation

8. The stability of carbocation is affected by -----

a) Inductive effect b) hyperconjugation

c) resonance effect d) all of these

9. Positively charged trivalent carbon species is -----

a) carbanion b) free radical

c) Carbene d) carbonium

10. The electron releasing power ----- from NH_2 to C_6H_5 in aniline .

a) decreases b) increases

c) either a or b d) none of these

11. Inductive effect is ----- effect.

a) permanent b) Temporary

c) Time variable d) both a & c

12. The transfer of π electrons not shared by attacking agent is called ----- effect .

a) +I b) -E c) +E d) -I

13. An optically inactive molecule shows ----- of symmetry .

a) plane b) Centre c) alternating axis d) all of these

14. The compound $\text{CH}_3\text{-CH=CH-COOH}$ shows ----- isomerism.

a) geometrical b) conformational c) optical d) Cis – trans.

15. The optically active compound is -----

a) Me₂CHOH b) Me-CH=CH-Et c) CH₃CHBr₂ d) EtCH (NO₂)Br.

16. The compound having optical activity amongst the following is -----

a) 2-butanol b) 1-propanol c) 3-pentanol d) 1-pentanol

17. Which of the following is not chiral -----

a) fumaric acid b) 2-chloropentane c) meso tartaric acid d) 2-amino propionic acid.

18. Optical inactivity of meso tartaric acid is due to -----

a) Racemisation b) Internal compensation
c) External compensation d) None of these

19. Non-superimposable mirror images are called -----

a) Enantiomers b) diastereomers
c) conformers d) geometrical isomers

20. 2-pentene exhibit ----- isomers.

a) Conformational b) geometrical
c) Optical d) None of these

21. Geometrical isomerism is shown by -----

a) xxC=Cyy b) abC=Cab c) xyC=Cab d) aaC=Cab

22. Restrictive rotations can be shown by -----

a) imine b) alkene c) cycloalkanes d) any of these

23. A chiral centre is attached to Me, OH, Cl, Br groups so priority order of groups is -----

- a) Me > OH > Cl > Br b) Me > OH > Cl > Br c) F > Br > OH > OR d) Br > F > OR > OH

24. Four groups attached to chiral centre are OH, OR, NO₃, NO₂ so their priority order is -----

- a) Br > F > OH > OR b) F > Br > OH > OR c) F > Br > OH > OR
d) Br > F > OR > OH

25. Which of the following is aromatic ?

- a) Cyclopropenyl anion b) Cyclobutane c) Cyclopropenyl cation
d) Cyclopentnyl cation

26. ----- is non-benzoid compound.

- a) Naphthalene b) Anthracene c) Pyrrole d) Nitrobenzene

27. Benzene is ----- in nature.

- a) basic b) acidic c) amphoteric d) neutral

28. Cyclobutadiene is ----- by nature.

- a) aromatic b) anti-aromatic c) non-aromatic d) None of these

29. Phenol is aromatic while ----- is non-aromatic.

- a) Naphthalene b) cyclohexane c) Cyclopropenyl anion d)
Thiophene

30. As per Huckel's rule the number of pi-electrons needed to be aromatic -----

- a) 4 b) 6 c) 2 d) both B & C

31. In benzene ----- type of overlapping is not observed.

- a) p-p b) sp² - sp² c) sp² - s d) sp - sp

32. The electrophile used in sulphonation of benzene is -----

- a) SO_3H^- b) SO_3 c) SO_2 d) H_2SO_4

33. Friedel craft reaction occurs by ----- mechanism.

- a) free radical b) nucleophile c) electrophilic d) any one of these

34. Among the following compound cycloalkane with Pt on heating we give -----

- a) Propane b) Cyclopropane c) Cyclobutane d) all of these

35. By the reaction of cyclopropane with Pt on heating we give -----

- a) Propane b) Cyclopropene c) Propene d) Propyl halide

36. The general formula of alkadiene is -----

- a) $\text{C}_n\text{H}_{2n+2}$ b) C_nH_{2n} c) $\text{C}_n\text{H}_{2n-2}$ d) $\text{C}_n\text{H}_{2n+1}$

37. Cyclopropane react with hydrogen bromide to form -----

- a) 2-bromopropane b) 3-bromopropane c) 1-bromopropane
d) None of these

38. The compound $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}-\text{CH}=\text{CH}_2$ belongs to diene -----

- a) Conjugated b) isolated c) Cumulated d) None of these

39. The compound hexa-1,3-diene is an example of ----- diene .

- a) isolated b) Cumulated c) Cyclo d) Conjugated

40. Ozonolysis of 1,3 butadiene forms a mixture of -----

- a) Two mole of formaldehyde and one mole of glyoxal
b) one mole of formaldehyde and two mole mole of glyoxal
c) One mole of formaldehyde and two mole of glyoxal
d) formaldehyde and glyoxal

41. An atom or group which attract the bonding electrons more strongly than hydrogen is -----

- a) +I b) -I c) M d) E

42. In inductive effect displacement of ----- electrons of covalent bond due to presence of electron withdrawing or releasing group occurs.

- a) sigma b) pi c) both a & b d) None of these

43. The intermediate electronic state of molecule for which different electronic arrangements are possible are called -----

- a) inductive effect b) electromeric effect c) hyperconjugation D
resonance

44. syn and anti prefixes used to describe geometrical isomers of aldoxime indicate relationship between OH group with -----

- a) H atom b) alkyl group c) N atom d) C atom

45. Non-superimposable mirror images of an optically active compound cannot be -----

- a) Optical antipodes B) diastereomers c) Enantiomers D) Enantiomorphs

46. In organic compounds presence of chiral carbon causes ----- isomerism .

- a) Geometrical b) Conformational c) Optical d) Cis - Trans

47. In benzene C=C bond distance is -----

- a) 1.39 Å b) 1.54 Å c) 1.34 Å d) 1.20 Å

48. Benzene carry three double bonds so it readily -----

- a) undergo addition reaction b) Decolourises dilute KMnO_4

c) Undergo electrophilic addition reaction

d) none of these

49. Dehydration of cycloalchol followed by reduction leads to formation of -----

- a)alkane b)Cycloalkane d)cycloalkene d)None of these

50.Cycloalkene on halogenations forms -----

- a)Halocycloalakane b)Haloalkane c)di halocycloalkane d) All of these .

Que 2 -Answer the following question (10marks each)

1. Write a note o electronic displacements. a) Inductive effect b)Electronic effect .
2. What is carbocation ?Give prepration methods ,structure and stability of carbocation .
3. Define carbanion .Give it's prepration methods stability and reactivity,
4. What are free radicals ? Discuss preprations methods of free radical .
Explain following reactions of free radicals.
5. Discuiss stereoisomerism in 2,3- dihydroxy butanoic acids
6. Explain with examples geometrica isomerism in oximes.
7. Explain optical isomerism in tartaric acids .
8. Explain Enantiomers ,Disteromers &chiral centers briefly.
9. Discuss Mechanism of Electrophilic substitution with nitration and sulphonation reactions
- 10.What are cycloalkanes ?How are they named?How will you cyclobutene by different methods ?What is the action of following reagent on cyclopropane i)bromine ii)Hydrogen in presence of catalyst iii) Hydrogen chloride.

Que :-3 short answer questions ..(5 marks each)

- 1.free radical-generations and stability
- 2.cleavage of bonds
- 3.Resonance effect
- 4.Inductive effect.