Question Bank

Sem-V

Organic Chemistry

1. In steroid nomenclature, the prefix "nor" means

a) straight chain

b) having an extra alcohol group

c) having an extra methyl group

d) missing an alcohol group

e) missing a methyl group

2. 5β-cholestane-3-one forms on bromination forms:

a) 4-bromo derivative

b) 2-bromo derivative

c) 3-bromo derivative

d) No reaction

3. Cholesterol gives upon oxidation with H_2O_2

a) trans product

b) cis product

4. Cholesterol gives upon oxidation with KMnO4

a) trans product

b) cis product

5. Acetates of 5α-cholestane-3β-ol get hydrolysed than 5α-cholestane-3α-ol

a) very slowly

b) same rate

c) more rapidly

6. For esterification of steroid hydroxyl groups

a) equatorial group is preferred

b) axial group is preferred

c) no particular preference

7. For oxidation of saturated steroids

a) equatorial group is preferred

b) axial group is preferred

c) no particular preference

8. In bimolecular ionic elimination reactions of steroids

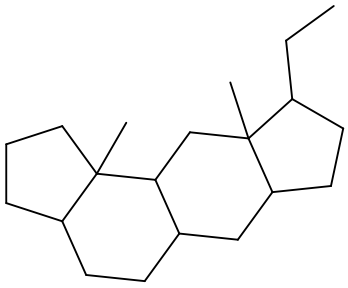
a) cis diaxial groups are eliminated

b) trans diaxial groups are eliminated

c) equatorial, axial groups are eliminated

d) trans diequatorial groups are eliminated

9. Structure given below is



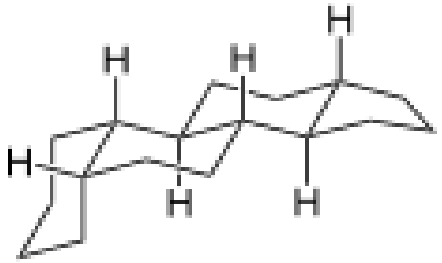
a) Pregnane

b) androstane

c) estrange

d) A-nor-Pregnane

10. Structure given below is chair conformer of



a) 5α-gonane

b) 5β-gonane

c) 5α-androstane

d) 5β-estrane

11. Number of chiral centers present in the basic steroid ring is

a) 4

b)3

c) 5

d) 6

12. Ring present in a steroid is

a) Cyclopentanoperhydrophenanthrene

b) Cyclopentanoperhydronaphthalene

c) cyclohexanoperhydrophenanthrene

d) cyclohexanoperhydronaphthalene

13. Calculate the isoelectric point of histidine, which has pK1= 1.77, pK2= 6.10, pK3= 9.18.

a) 6.33

b) 3.93

c) 7.64

d) 10.93

14. Size exclusion chromatography of monodisperse fractions of a linear polymer A and B yield molecular weights of 1,00,000 and 3,00,000 respectively. A mixture is prepared from 2 parts by weight of A and 4 parts by weight of B. Determine weight average molecular weights.

a) 2,33,333

b) 4,00,000

c) 2,00,000

d) 14,00,000

15. During DNA synthesis, _____does not require to be protected

a) Adenine

b) Guanine

c) Thymine

d) Cytosine

16. Example of non-biodegradable polymer is

a) Polyethylene

b) Cellulose

c) Nylon

d) polyhydroxybutyrate

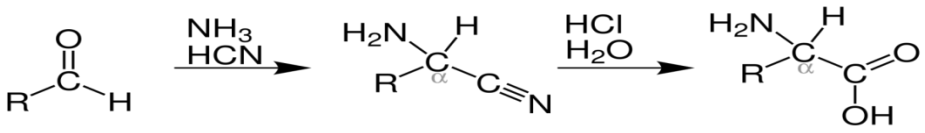
17. Isoelectric point is the pH at which net charge on molecule is

a) Positive

b) Negative

c) Zero

18. Following scheme is for synthesis of amino acid using



a) HVZ reaction

b) Strecker synthesis

c) Reductive Amination of α-Keto Acids

d) Amidomalonate synthesis

19. For synthesis of Ala-Ser dipeptide first step is

a) Protection of NH2 group of alanine

b) Protection of COOH group of alanine

c) Protection of NH2 group of Serine

d) Protection of COOH group of Serine

20. Carboxyl protectiong group is

a) Boc

b) Fmoc

c) Methyl Ester

d) Ether

21. Amino group protecting group is

a) Boc

b) Benzyl ester

c) Methyl Ester

d) Ether

22. To prepare a simple dipeptide using solution phase chemistry how many steps are required?

a) 2

b) 3

c) 5

d) 4

23. Give the amino acid sequence of hexapeptides that produce the following sets of fragments on partial acid hydrolysis: Arg, Gly, Ile, Leu, Pro, Val gives Pro-Leu-Gly, Arg-Pro, Gly-Ile-Val

a) Arg-Pro-Leu-Gly-Ile-Val

b) Pro-Leu-Gly-Ile-Val-Arg

c) Gly-Ile-Val-Arg-Pro-Leu

d) Val-Arg-Pro-Leu-Arg-Gly

24. Give the amino acid sequence of hexapeptides that produce the following sets of fragments on partial acid hydrolysis: N, L, M, W, V2 gives V-L, V-M-W, W-N-V

a) W-N-V-M-W-V

b) V-M-W-N-V-L

c) V-L-M-W-N-V

d) L-V-W-M-V-N

25. Edman reagent is

a) PITC

b) PIC

c) ATZ

d) PTH

26. 19- Nor steroidal nucleus is

a) cholestane

b) androstane

c) estrane

d) pregnane

27. Cholesterol has hydroxyl group attached to carbon at its

a) 3rd Position

b) 4th Position

c) 6th Position

d) 5th Position

28. Example of a non aromatic heterocycle is

a) Pyridine

b) Pyrimidine

c) Cyclohexane

d) Morpholine

29. Oxirane reacts with ethylene diamine to form

a) Piperazine

b) Piperidine

c) Morpholine

d) Indoline

30. Catalytic hydrogenation of pyridine gives

a) Pyrazine

b) Piperazine

c) Piperidine

d) Pyrimidine

31. Carbohydrates are converted to Furan in _____ conditions

a) **acidic**

b) basic

c) neutral

d) drastic

32. Correct basicity order is

a) Basicity order: Pyrazole > Imidazole > Pyridine > pyrrole
b) Basicity order: Imidazole > Pyrazole > Pyridine > pyrrole
c) Basicity order: Imidazole > Pyridine > Pyrazole > pyrrole
d) Basicity order: Imidazole > pyrrole > Pyridine > Pyrazole

33. In Paal-Knorr method of synthesis of Furan, starting material is _____

a) 1,2 diketone

b) alpha, beta diketone

c) **1,4 diketone**

d) 2-mino-1,4-diketone

34. Furan is converted to pyrrole by using _____

a) NH3

b) R2NH

c) NaNH2

d) Pyridine

35. α Haloketone reacts with Benzimidine to yield

a) 2,3 substituted imidazole

b) 2,4 substituted imidazole

c) 2 substituted imidazole

d) 4 substituted imidazole

36. 4-methylimidazole and _____ are equivalent structures.

a) 4-methylimidazole
b) 3-methylimidazole
c) 5-methylimidazole
d) 4-methylimidazole

37. In The Knorr Synthesis of Pyrrole, condensation of _____ with another dicarbonyl compound with active methylene group in presence of acetic acid

a) Alfa amido ketone
b) beta amino ketone
c) Alfa amino ketone
d) Alfa amino ester

38. Hydrogen bonding exists in _____

a) Thiophene
b) Imidazole
c) Furan
d) Pyridine

39. Five membered heterocycles undergo electrophilic substitutions involving electrophilic attack at the _____ of high electron density.

a) α positions
b) β positions
c) α and β positions
d) δ positions

40. In sulfonation of Pyrrole, mild sulfonating agent _____ is used

a) Pyridine sulfur trioxide complex
b) sulfur trioxide
c) Pyridine sulfurdioxide complex
d) Pyridine sulfuroxide complex

41. Thiophene reacts with _____ to give 2- bromothiophene

a) N-Bromosuccinimide
b) Tribromosuccinimide
c) Br2 in CCl4
d) Br2, HBr

42. _____ involves the cyclizative condensation of α-halo ketones with thioamides in the synthesis of Thiazoles

a) Gabriel Synthesis
b) **Hantzsch's Synthesis**
c) Cook- Heilborn's Synthesis
d) Edmund synthesis

43. Thiazole ring is relatively resistant to oxidation, but the thiazoles substituted with activating groups are oxidized to their N-oxides by

a) Only KMnO4
b) hydrogen peroxide and peracetic acid
c) KMnO4, hydrogen peroxide and peracetic acid
d) KMnO4 and peracetic acid

44. In the resonance structure of oxazole, _____ is negatively charged

a) Oxygen
b) Nitrogen
c) Carbocyclic ring
d) Nitrogen and ring

45. Nitration & sulfonation is _____ because of pyridine type nitrogen of oxazole

a) Difficult
b) Easy
c) Impossible
d) Common

46. In the structure of imidazole, electrophilic substitution is favoured at

a) 1^{st} and 3^{rd} position
b) 2^{nd} and 3^{rd} position
c) 4^{th} and 5^{th} position
d) 2^{nd} and 5^{th} position

47. Zinc in acetic acid reduces pyrrole to yield

a) 2,4 dihydropyrrole
b) Pyrrolidine
c) 2,3 dihydropyrrole
d) 2,5 dihydropyrrole

48. Oxygen in Furan is

a) Not hybridized
b) sp hybridized
c) sp2 Hybridized
d) sp3 Hybridized

49. Sulphur in Thiophene is

a) Not hybridized
b) sp hybridized
c) sp2 Hybridized
d) sp3 Hybridized

50. Nitrogen in pyrrole is

a) Not hybridized
b) sp hybridized
c) sp2 Hybridized
d) sp3 Hybridized

51. In Mannich reaction, _____ ion is formed to react with Indole

a) iminium
b) ammonium
c) cyanonium
d) ammino

52. Pyrimidine is _____

a) strong base
b) weak base
c) neutral heterocycle
d) very weakly acidic

53. In _____ synthesis of indole, o-toluidine is used as starting material

a) Bischler–Möhlau
b) Medlung
c) Wolf-Kishner
d) Paal Knorr