The Bodwad sarv. Co.op Edu. Society ltds Bodwad

Arts, Commerce and Science college Bodwad Dist-Jalgaon

Questions bank

Class- F.Y.B.Sc **Sem- II**

Subject- Chemistry. **Paper name- Organic and Inorganic chemistry**

1. The addition of HCN to carbonyl compounds is an example of

(a) **nucleophilic addition**

(b) electrophilic addition

(c) free radical addition

(d) electromeric addition

2. Which of the following will not give aldol condensation?

(a) Phenyl acetaldehyde

(b) 2-Methylpentanal

(c) **Benzaldehyde**

(d) 1-Phenylpropanone

3. Aldehydes other than formaldehyde react with Grignard's reagent to give addition products which on hydrolysis give

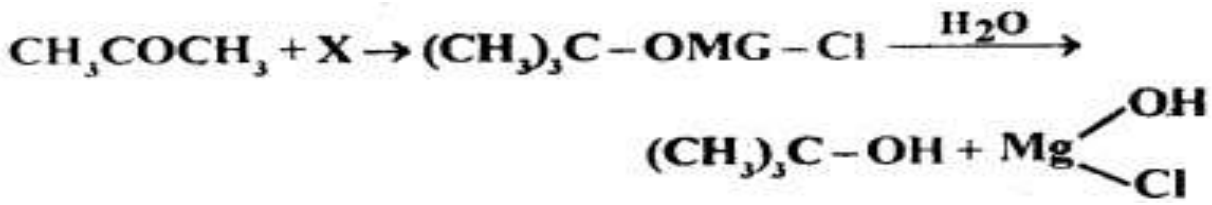
(a) tertiary alcohols

(b) **secondary alcohols**

(c) primary alcohols

(d) carboxylic acids

4. Identify reactant (X) in the given reaction sequence



(a) **CH3MgCl**

(b) CH3COCl +Mg

(c) MgCl2

(d) CH3CH2MgCl

5. Which of the following compounds will undergo Cannizzaro reaction?

(a) CH3CHO

(b) CH3COCH3

(c) **C6H5CHO**

(d) C6H5CH2CHO

6. Hydrocarbons are formed when aldehydes or ketones are reacted with amalgamated zinc and conc. HCl. The reaction is called

(a) Cannizzaro reaction

(b) **Clemmensen reduction**

(c) Rosenmund reduction

(d) Wolff-Kishner reduction

7. Which compound is obtained when acetaldehydes are treated with dilute solution of caustic soda?

(a) Sodium acetate

(b) Resinous mass

(c) **Aldol**

(d) Ethyl acetate

8. Under Wolff-Kishner reduction conditions, the conversions which may be brought about are

A. **cyclohexanone into cyclohexane**

B. benzaldehyde into benzyl alcohol

C. cyclohexanone into cyclohexanol

D. None of the above

9. The formation of cyanohydrin from a ketone is an example of

A. electrophilic addition

B. **nucleophilic addition**

C. nucleophilic substitution

D. electrophilic substitution

10. The IUPAC name of CH3- CHBr- CH2- CHO is _____.

A. 2-bromo butanal

B. 3- bromo butanal

C. 4- bromo butanal

D. 1- bromo butanal

11. A mixture of benzaldehyde and formaldehyde on heating with aqueous NaOH solution gives

A. **benzyl alcohol and sodium formate**

B. sodium benzoate and methyl alcohol

C. sodium benzoate and sodium formate

D. Benzyl alcohol and ethyl alcohol

12. Which of the following compounds will give butanone on oxidation with alkaline KMnO4 solution?
(i) Butan-1-ol

(ii) **Butan-2-ol**

(iii) Both of these

(iv) None of these

13. Which of the following conversions can be carried out by Clemmensen Reduction?
(i) Benzaldehyde into benzyl alcohol

(ii) **Cyclohexanone into cyclohexane**

(iii) Benzoyl chloride into benzaldehyde

(iv) Benzophenone into diphenyl methane

14. Which of the following compounds do not undergo aldol condensation?

A. CH3—CHO

B. **Ph- CHO**

C. CH3-CH2-CHO

D. Ph- CH2-CHO

15. In Clemmensen Reduction carbonyl compound is treated with _____.

(i) **Zinc amalgam + HCl**

(ii) Sodium amalgam + HCl

(iii) Zinc amalgam + nitric acid

(iv) Sodium amalgam + HNO3

16. The reagent which does not react with both, acetone and benzaldehyde.

(i) Sodium hydrogensulphite

(ii) Phenyl hydrazine

(iii) **Fehling's solution**

(iv) Grignard reagent

16. Which Catalyst is used in Rosenmund reduction?

a) **Pd / BaSO4**

b) Zn-Hg couple

c) LiAlH4

d) Ni/H2

17. What is the product X in the following reaction?

C6H6 + CO+ HCl (Unhydrous AlCl3) ----> X + HCl

a) C6H5CH3

b) C6H5CH2Cl

c) **C6H5CHO**

d) C6H5COOH

18. O3 reacts with CH2=CH2 to form ozonide. On hydrolysis it forms which of the following?

a) Ethylene oxide

b) **HCHO**

c) Ethylene glycol

d) Ethyl alcohol

19. Hydrolysis of CH3CH2NO2 with 85% H2SO4 gives which of the following compound?

a) CH3CH2OH

b) C_2H_6

c) $CH_3CH=NOH$

d) **CH_3COOH**

20. Acetic acid is obtained when which of the given reaction takes place?

a) Methyl alcohol is oxidised with potassium permanganate

b) Calcium acetate is distilled in the presence of calcium formate

c) **Acetaldehyde is oxidised with potassium dichromate and sulphuric acid**

d) Glycerol is heated with sulphuric acid

21. When benzyl alcohol is oxidised with $KMnO_4$, the product obtained is which of the following compound?

a) Benzaldehyde

b) **Benzoic acid**

c) CO_2 and H_2O

d) Benzophenone

22. Benzoic acid reacts with conc.HNO_3 and conc.H_2SO_4 to give

A. o-nitrobenzoic acid

B. p-nitrobenzoic acid

C. **m-nitrobenzoic acid**

D. o,p-dinitrobenzoic acid

23. Which class of compound is an example of a carbonyl compound?

a) alcohol

b) **carboxylic acid**

c) alkene

d) alkane

24. Which molecule is an example of a ketone?

a) Ethanal (Acetaldehyde)

b) Ethanoic anhydride (Acetic anhydride)

c) **Propan-2-one (acetone)**

d) Propanamide

25. Which molecule is an example of an amide?

a) Ethanal (Acetaldehyde)

b) Ethanoic anhydride (Acetic anhydride)

c) Ethyl propanoate

d) **Propanamide**

26. Which molecule is an example of an acid chloride?

a) **Propanoyl chloride**

b) Ethanoic anhydride (Acetic anhydride)

c) Ethyl propanoate

d) Propanamide

27. Which carbonyl compound would react violently with water?

a) Propan-2-one (acetone)

b) **Ethanoyl chloride (Acetyl chloride)**

c) Ethanoic acid (Acetic acid)

d) Ethanal (Acetaldehyde)

28. Conversion of an aldehyde to an alcohol is generally known as...

a) **Reduction**

b) Oxidation

c) Esterification

d) Polymerisation

29. Conversion of a carboxylic acid to an ester is known as...

a) Reduction

b) Oxidation

c) **Esterification**

d) Polymerisation

30. Why is sodium borohydride an important reagent in reducing a ketone?

a) It is good for hydrolysis type reactions

b) It is a good source of the hydride ion (H-)

c) It can act as a base

d) It can act as a free radical initiator.

31. The products of the reaction of a carboxylic acid and an alcohol would be...

a) Ketone and water

b) Amide and water

c) Acid chloride and water

d) **Ester and water**

32. When - COOH is attached directly to the benzene ring the acid is called

A. Aliphatic

B. Alicyclic

C. Carboxylic

D. **Aromatic**

33. The common thing in phthalic acid and oxalic acid is that both are

A. Aromatic

B. **Dicarboxylic**

C. Hydrocarbons

D. Strong acids

34. The irritation caused by red ants bite is due to

A. Lactic acid

B. Formic acid

C. Uric acid

D. **Acetic acid**

35. Which of the following is the strongest acid?

A. Water

B. **Formic acid**

C. Acetic acid

D. Propanoic acid

36. The organic acid that does not has COOH group is

A. phthalic acid

B. **carbolic acid**

C. Maleic acid

D. Succinic acid

37. Which one of the following acids is present in lemon juice?

A. **Citric acid**

B. Benzoic acid

C. Tartaric acid

D. Oxalic acid

38. Carboxylic acid reacts with ammonia to form ammonium salts which on heating produces

A. CO2

B. Alkane

C. Ester

D. **Acidamide**

39. The complete reduction carboxylic acid results in the formation of

A. Alkyne

B. Alkene

C. **Alkane**

D. Alcohol

40. The organic acid that can be made from ethanol is

A. **Acetic acid**

B. Formic acid

C. Butanoic acid

D. Citric acid

41. The basic hydrolysis of ethyl acetate produces

A. ethanol

B. acetic acid

C. ethanol and acetic acid

D. **ethanol and sodium acetate**

42**.** The reaction of carboxylic acids with alcohols in presence of cone. H_2SO_4 is called

A. **esterification**

B. neutralization

C. hydrolysis

D. saponification

43. Which of the following is an unsaturated carboxylic acid

A. malonic acid

B. oxalic acid

C. succinic acid

D. maleic acid

44. Hydrogenation of benzyoyl chloride in the presence of Pd on $BaSO_4$ gives

(a) Benzyl alcohol

(b) **Benzaldehyde**

(c) Benzoic acid

(d) Phenol

45. Benzoyl chloride is prepared from benzoic acid by

(a) Cl_2, hv

(b) SO_2Cl_2

(c) **$SOCl_2$**

(d) Cl_2,H_2O

46. Which of the following is true for the basicity of amines?

(a) Alkylamines are generally less basic than arylamines because N is sp hybridised

(b) Arylamines are generally more basic than alkylamines due to aryl group

(c) **Arylamines are generally less basic than alkylamines due to delocalisation of lone pair of electrons in the benzene ring**

(d) Alkylamines are generally less basic than arylamines because lone pair of electrons on N in the arylamines are not delocalised in the benzene ring

47. Which of the following is incorrect for primary amines?

(a) On reaction with nitrous acid alkylamines produce alcohol

(b) **On reaction with nitrous acid arylamines produce phenol**

(c) Alkylamines are more basic than ammonia

(d) Alkylamines are more basic than arylamines

48. Aniline is less basic than

(a) **Benzylamine**

(b) Triphenylamine

(c) p-Nitroaniline

(d) Diphenylamine

49. Which of the following is formed when an alkyl primary amine reacts with nitrous acid?

(a) Alkyl nitrite

(b) Secondary amine

(c) Nitroalkane

(d) **Alcohol**

50. This on reduction with LiAlH4 produces secondary amine

(a) Methyl cyanide

(b) Nitroethane

(c) **Methyl isocyanide**

(d) Acetamide

51. Which of the following is formed in the reaction of an aldehyde and primary amine?

(a) Ketone

(b) Aromatic acid

(c) **Schiff's base**

(d) Carboxylic acid

52. When excess of ethyl iodide is treated with ammonia, the product is

(a) ethylamine

(b) diethylamine

(c) triethylamine

(d) **tetrathylammonium iodide**

53. Reduction of CH3CH2NC with hydrogen in presence of Ni or Pt as catalvst gives

(a) CH3CH2NH2

(b) **CH3CH2NHCH3**

(c) CH3CH2NHCH2CH3

(d) (CH3)3N

54. Secondary amines can be prepared by

(a) reduction of nitro compounds

(b) oxidation of N-substituted amides

(c) **reduction of isonitriles**

(d) reduction of nitriles

55. Tertiary amines have lowest boiling points amongst isomeric amines because

(a) they have highest molecular mass

(b) **they do not form hydrogen bonds**

(c) they are more polar in nature

(d) they are most basic in nature

56. Arrange the following compounds in increasing order of basicity:

CH3NH2, (CH3)2 NH, NH3, C6H5NH2

(a) C6H5NH2 < NH3 < (CH3)2NH < CH3NH2

(b) CH3NH2 < (CH3)2NH < NH3 < C6H5NH2

(c) **C6H5NH2 <NH3 < CH3NH2<(CH3)2NH**

(d) (CH3)2NH < CH3NH2 <NH3 < C6H5NH2

57. Among the compounds C3H7NH2, CH3NH2, C2H5NH2, and C6H5NH2. Which is the least basic compound?

(a) CH3NH2

(b) C2H5NH2

(c) C3H7NH2

(d) **C6H5NH2**

58. Reduction of aromatic nitro-compounds using Sn and HCl gives

(a) **aromatic primary amines**

(b) aromatic secondary amines

(c) aromatic tertiary amines

(d) aromatic amides

60. Which of the following compounds reacts with NaNO2 and HCl at 0-4°C to give alcohol/phenol?

(a) C6H5NH2

(b) **C2H5NH2**

(c) CH3NHCH3

(d) C6H5NHCH3

61. The compound X is which of the following?

CH3CN + Na/ C2H5OH ----> X

a) CH3CONH2

b) **CH3CH2NH2**

c) C2H6

d) CH3NHCH3

62. Reduction of nitroalkanes yields which compound?

a) Acid

b) Alcohol

c) **Amine**

d) Diazo compounds

63. The equivalent weight of an acid can be calculated by

(a) Molecular weight × basicity

(b) **Molecular weight/basicity**

(c) Molecular weight × acidity

(d) Molecular weight/acidity

64. The concentration of a solution may be obtained by titrating it against a primary standard solution. Which one of the following conditions is NOT necessary when choosing a primary standard?

A. It should not react with the air.

B. It should have a relatively high molecular mass.

C. It should form a colourless solution.

D. It should not contain water of crystallisation.

65. Which TWO of the following processes will increase the concentration of a solution? (a) Increase the amount of solute. (b) Decrease the amount of solute. (c) Increase the amount of solvent. (d) Decrease the amount of solvent.

A. (a) and (c)

B. (a) and (b)

C. **(a) and (d)**

D. (b) and (d)

66. Which one of the following would best describe a molar solution?

A. **A solution that contains one mole of solute dissolved in a litre of solution.**

B. A solution that contains one mole of solute dissolved in 100 cm3 of solution.

C. solution that contains one mole of solute dissolved in a mole of solvent.

D. A solution that contains 100 g of solute dissolved in one mole of solution.

67. Which one of the following solutions could NOT be used as a primary standard solution?

A. Sodium chloride (NaCl)

B. Potassium dichromate (K2Cr2O7)

C. Anhydrous sodium carbonate (Na2CO3)

D. **Sodium hydroxide (NaOH)**

66. A student was asked to make up a 10% w/v solution of sodim carbonate. Which one of the following methods should have been followed?

A. **Dissolve 10 g of the sodium carbonate in water and make up to a volume of 1litre in a volumetric flask by adding more wate**r.

B. Dissolve 10 g of the sodium carbonate in exactly 100 cm3 of water.

C. Dissolve 10 g of the sodium carbonate in water and make up to a mass of 100 grams by adding more water.

D. Dissolve 10 g of the sodium carbonate in water and make up to a volume of 100 cm3 in a volumetric flask by adding more water.

67. A bottle of whiskey is labelled 43% v/v of ethanol. This means that

A. **there are 430 ml of ethanol in every litre of the whiskey.**

B. there are 43 g of ethanol in every 100 g of the whiskey.

C. there are 43 g of ethanol in every 100 ml of the whiskey.

D. there are 430 ml of ethanol in every 1000 g of the whiskey.

68. Which type of glassware is used in a titration to deliver an accurate volume of a solution to a known volume of another solution?

A. Burrette

B. **Pipette**

C. Funnel

D. Beaker

69. A standard solution is a solution with accurately known.....

A. Volume

B. **Concentration**

C. Colour

D. Reactivity

70. The point in an acid-alkali titration at which the reactants just react completely with each other is called the _____ point.

A. **end point**

B. equivalence point

C. Boiling point

D. Freezing point

71. In the case of volumetric analysis the analyte is

A. the solution of known concentration

B. the titrant

C. a titration

D. **the solution of unknown concentration**

72. A titration is a technique used to.....

A. determine the identity of an unknown substance

B. **determine the volume of an unknown substance**

C. determine the molarity of an unknown substance

D. determine if an unknown substance is a solid, liquid, or gas

73. The covalent bond exist in

A. NaCl

B. **NH3**

C. AlCl3

D. CaCl2

74. Which of the following contain ionic bond...

A. CaCl2

B. **NH3**

C. HF

D. H2O

75. Covalent bond is possible between...

A. Similar atoms

B. Dissimilar atoms

C. **Similar dissimilar atoms**

D. Similar molecules

76. Axial overlap of S orbitals results in to....

A. Ionic bond

B. **Sigma bond**

C. Pi bond

D. Cordinate bond

77. In NH3 molecule there are...

A. One sigma bond and two lone pair

B. **Three sigma bond and one lone pair**

C. Two sigma bond and two lone pair

D. Three sigma bonds and one pi bond

78. In N2 molecule there are...

A. One sigma bond and one pi bond

B. Two sigma bond and one pi bond

C. **One sigma bond and two pi bond**

D. All bonds are sigma

79. s-orbitals are nondirectional because of

(a) **spherical symmetry**

(b) their small size

(c) being first orbital

(d) All of the above

80. P-P overlap results into formation of...

A. Only sigma bond

B. **Can form both sigma as well as pi bond**

C. Only pi bond

D. All are correct

81. In O2 molecule there are...

A. **One sigma bond and one pi bond**

B. Two sigma bond and one pi bond

C. One sigma bond and two pi bond

D. All bonds are sigma

82. In H2O molecule there are...

A. One sigma bond and two lone pair

B. Three sigma bond and one lone pair

C. **Two sigma bond and two lone pair**

D. Three sigma bonds and one pi bond

83. Which one of the following would best describe a Normal solution?

A. A solution that contains one mole of solute dissolved in a litre of solution.

B. A solution that contains one mole of solute dissolved in 100 cm3 of solution.

C. solution that contains one mole of solute dissolved in a mole of solvent.

D. **A solution that contains 1gm equivalent weight of solute dissolved in one litre of solution.**

84. P orbitals can overlaps ....

A. Laterally only (side wise)

B. Axially only

C. **Both laterally as well as axially**

C. Donot overlap

85. One molal solution can be prepared by dissolving....

A. one mole solution in one litre of solvent.

B. One gm equivalent weight of substance in one litre of solvent.

C. **One mole of solute in one kilogram of solvent.**

D. One mole of solute in 100 ml of solvent.

86. P orbitals has...

A. Spherical shape

B. **Dumbled shape**

C. Trigonal Planner shape

D. Not perfect shape

87. Which of the following is not required when preparing a standard solution of the primary standard anhydrous sodium carbonate?

A. A volumetric flask.

B. Deionised water.

C. An accurate balance.

D**. A burette**.

88. Which of the following is used as catalyst for the esterification of carboxylic acid and alcohol?

a) Nitrous acid

b) Sulphuric acid

c) Sulphurous acid

d) Nitric acid

89. Hydrolysis of ester leads to the formation of which of the following products in basic medium?

a) Ether and alcohol

b) **Alcohol and sodium carboxylate**

c) Aldehyde and alcohol

d) Sodium carboxylate

90 What is the characteristic smell for ester?

a) **Fruity like smell**

b) Fish like smell

c) Rotten egg smell

d) Alcoholic smell

91. Acetophenone is prepared from which reaction?

a) Rosenmund reaction

b) Sandmayer reaction

c) Wurtz reaction

d) **Friedel craft reaction**

92. Ketones can be prepared in one step from which of the following process?

a) Hydrolysis of esters

b) Oxidation of primary alcohol

c) **Oxidation of secondary alcohol**

d) Reaction of acid halide with alcohols

93. The carbonyl compound on reaction with HCN gives.....

A. Carboxylic acid

B. **Cyanohydrin**

C. Amines

D. Nitrile

94. The boiling points of carboxylic acid increases with....

A. Temperature

B. PH

C. **Increase in molecular weight**

D. Vandarwaal forces

95. What ch statment is correct for Sigma bond

A. More stronger than pi bond.

B. Has small bond length than pi bond

C. Forms with overlap of S- S orbitals

D. **All of the above**

96. The bond angle for tetrahedral geometry is..

A. 120 degree

B. **109.5 degree**

C. 180 degree

D. 90 degree

97. Water molecule has geometry of..

A. Linear

B. Tetrahedral

C.**square planner**

D. Trigonal Planner

98. Cl2 molecule has...

A. **Three lone pairs**

B. Four lone pairs

C. Two lone pairs

D. One lone pair

99. Carboxylic acids has..

A. Intermolecular hydrogen bonding

B. Intramolecular hydrogen bonding

C. **Both A and B**

D. None of the above

100. Which statement is correxct for Carbonyl group (>C=O)...

A. Polar in nature

B. Carbon is SP2 hybridised

C. One Sigma bond and one pi bond

D. **All are correct.**