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Question Bank

Subject: Chemistry, **Course:** B.Sc.(H), **Year:** Part 1
Paper: II

1.Atomic Structure :

1.What is a blackbody?

(a) A body that absorbs all the electromagnetic radiation that falls on it.
(b) A body that absorbs only infrared part of the electromagnetic radiation.
(c) A body that absorbs only visible part of the electromagnetic radiation.
(d) A body that absorbs only microwave part of the electromagnetic radiation.

2.The rate of radiation emitted per unit surface area of a blackbody depends:

(a) Only on temperature of materials.

(b) Only on the nature of materials.

(c) Both (a) & (b)

(d)Neither on the temperature nor on the nature of materials.

3.The value of Planck's constant is:

(a)6.626×10^{-33}J.S

(b) 6.626×10^{-35}J.S

(c) 6.626×10^{-34} J.S

(d) 6.626×10^{-23} J.S

4.The relation between energy (E) and frequency (υ) of the electromagnetic radiation is:

(a)$E=h\upsilon$

(b)E= υ/h

(c) E=h/υ

(d) E=1/hυ

Q 5. The particle nature of the electromagnetic radiation is given by:

(a) Planck's Quantum Theory
(b) Heisenberg Uncertainty Principle
(c) The De Broglie Hypothesis
(d) None

Q 6. Heisenberg Uncertainty Principle is applicable to:

(a) Macroscopic particles
(b) Ideal Gases
(c) Real Gases
(d) Microscopic particles

Q 7. According to Heisenberg Uncertainty Principle:

(a) $\Delta x.\Delta p_x \geq h/4л$
(b) $\Delta x.\Delta p_x = h/2л$
(c) $\Delta x.\Delta p_x \leq h/4л$
(d) $\Delta x.\Delta p_x = 1/h$

8. If the Uncertainty in position (ΔX) is zero then uncertainty in momentum (Δp) will be:

(a) Infinite (b) Zero (c) One (d) Cannot say

9. Heisenberg Uncertainty Principle was originally proposed in the year-

(a) 1925 (b) 1926 (c) 1927 (d) 1928

10.Which of the following effect provides a good illustration of Uncertainty Principle

(a) Raman effect
(b) Compton effect
(c) Stork effect
(d) None

11.De Broglie's Hypothesis was experimentally confirmed by:

(a) Davisson and Germer
(b) Niels Bohr
(c) R.A Millikan
(d) Rutherford

12.Which of the following equation demonstrates De Broglie hypothesis?

(a) P=hʎ (b) ʎ=hp (c) ʎ=h/p (d) ʎp=1

13.De Broglie Hypothesis is related with :

(a)Dual behaviour of light

(b) Real Gas
(c) Ideal Gas
(d) Dual behaviour of matter

14.Which of the following statement is **not** true:

(a) Both electron and light exhibit wave-particle duality
(b) Both light and electron travel at speed c in vacuum.
(c) Photons have zero rest mass and electron have non-zero rest mass
(d) None of the above

15.The value of Bohr orbit for H atom is:

(a) 5.29pm
(b) 529pm
(c) 52.9pm
(d) 0.529pm

16.The wavelength of a ball of mass 0.1kg moving with a velocity of 10 ms^{-1} is

(a) 6.626×10^{-34} m
(b) 6.626×10^{-36} m
(c) 6.626×10^{-38}m
(d) 6.626×10^{-39}m

17.One of the important implications of the Heisenberg Uncertainty Principle is that:

(a) It explains definite paths of electrons
(b) It explains definite paths of photons
(c) It rules out existence of definite paths of electrons
(d) It rules out existence of definite paths of photons.

18.The energy (E) of a quantum is related with its frequency (υ) as

(a) E=hv (b) E=h/v (c) E=v/h (d) E=2v/h

19.The smallest quantity of energy that can be emitted or absorbed in the form electromagnetic radiation is known as

(a) Proton
(b) Neutron
(c) Momentum
(d) Quantum

20.The energy of one mole of photons of radiation having frequency $5\times10^{14}\,H_z$ is

($h=6.626\times10^{-34}$ JS)

(a) 299.51kj mol^{-1}
(b) 399.51kj mol^{-1}
(c) 499.51kj mol^{-1}
(d) 199.51kj mol^{-1}

21.Which region of the electromagnetic radiation will provide photons of the least energy?

(a) Radio waves
(b) Ultraviolet
(c) X-rays
(d) Infrared

22.The phenomena of the black body radiation was given by:

(a) Niels Bohr
(b) J.J Thompson
(c) Max Planck
(d) H.Hertz

23.Which part of the electromagnetic spectrum can be seen by our eyes:

(a) Infrared
(b) Micro wave
(c) Visible
(d) X-rays

24.The frequency (V) wavelength (ʎ) and velocity of light (c) are related by the equation:

(a) C=v/ʎ (b)C=vʎ (c) C=ʎ/v (d) C=hvʎ

25.The number of wave lengths per unit length is known as:

(a) Quantum Number
(b) Wave Number
(c) Avogadro's Number
(d) Mass number

(B)**Solid State**

26. Which of the following is not a crystalline solid

(a) Glass (b) Sodium chloride (c) Potassium chloride (d) Calcium chloride

27. Which of the following is a covalent or network solid

(a) Sodium chloride (b) Barium chloride (c) Lithium chloride (d) Diamond

28. Which of the following is not an ionic solid

(a) Iodine (solid) (b) Sodium Chloride (c) Lithium chloride (d) Zinc sulphide

29. A small part of the space lattice of a crystal is used to specify it completely. This small part is called

(a) Motif (b) Lattice point (c) Unit cell (d) Cube

30. Which of the following is a molecular solid

(a) Solid iodine (b) Sodium chloride (c) Calcium fluoride (d) Ar(s)

31.Which of the following is a metallic solid

(a) HCl (b) Cu (c) NaCl (d) I_2

32.Total number of crystal system is

(a) 8 (b) 10 (c) 7 (d)12

33.The total number of Bravais Lattices is

(a) 16 (b) 14 (c) 12 (d) 10

34. For a cubic crystal system

(a) $a = b = c$ and $\alpha = \beta = \gamma = 120^o$

(b) $a \neq b \neq c$ and $\alpha = \beta = \gamma = 90^o$

(c) $a = b = c$ and $\alpha = \beta = \gamma = 90^o$

(d) $a = b = c$ and $\alpha = \beta = \gamma = 60^o$

35. The total number of atoms per primitive unit cell is

(a) 8 (b) 2 (c) 1 (d) 4

36. The total number of atoms per body centered unit cell is

(a) 8 (b) 6 (c) 4 (d) 2

37. The pattern of spheres repeated to form Hexagonal Closed Packed (hcp) structure is

(a) ABAB… (b) ABCABC… (c) ABBA…(d) ABCCBA…

38. The pattern of spheres repeated to form Cubic Closed Packed (ccp) structure is

(a) ABCABC… (b)ABAB… (c)ABBA… (d) ABCCBA…

39. The total number of octahedral voids presents in a Cubic Closed Packed (ccp) structure having N spheres is

(a) 2N (b) N (c) 4N (d) 3N

40. The total number of tetrahedral voids presents in aCubic Closed Packed (ccp) structure having N spheres is

(a) 2N (b) N (c) 4N (d) 3N

41. A compound is formed by two elements A and B. Atoms of the element B (as anions) make ccp and those of the element B (as cations) occupy all the octahedral voids. What is the formula of the compound?

(a) AB (b) A_2B (c) AB_2 (d) AB_4

42. The packing efficiency in both Cubic Closed Packed (ccp) and Hexagonal Closed Packed(hcp) structure is

(a)54% (b) 64% (c) 74% (d) 76%

43. The packing efficiency in Body Centered Cubic structure is

(a) 48% (b) 68% (c) 74% (d) 76%

44. The coordination number of an atom in a primitive cubic unit cell is

(a) 6 (b) 8 (c) 4 (d) 2

45. The coordination number of an atom in a face centered cubic unit cell is

(a) 12 (b) 8 (c) 6 (d) 14

46. Miller indices are used to describe

(a)Motion of the gas molecules

(b) Motion of the liquid molecules

(c)Motion of atoms in liquid

(d) A plane in a crystal

47. What is the Miller Indices of crystal planes which cut through the crystal axes at 2a, 3b, c

(a) 326 (b) 321 (c) 231 (d) 123

48. Which of the following is not related with the crystallography

(a) Miller Indices

(b) Weiss Indices

(c) X- ray diffraction

(d) Brownian Movement

49. The radius ratio of CsCl is 0.93. The expected lattice structure is

(a) Octahedral

(b) Square Planar

(c) Tetrahedral

(d) Body Centered Cubic

50. Which statement is not true

(a) The ratio of the radius of cations (r^+) to the radius of the anion (r^-) is known as the radius ratio of the ionic solid.

(b) Radius ratio is useful in predicting the structure of ionic solids.

(c) Greater the radius ratio, greater is the coordination number of cations and anions.

(d) Smaller the radius ratio, greater is the coordination number of cations and anions

(C) Thermodynamics

51. A thermodynamic system is

(a) that part of universe which is under consideration.

(b) that part of universe in which we make observations.

(c) a part of surroundings

(d) a part of boundary

52. Universe is

(a) an open system

(b) a close system

(c) isolated system

(d) All

53.An open system is one in which

(a) Both mass as well as energy is exchanged between system and surroundings

(b) Neither mass nor energy is exchanged between system and surroundings

(c) Only mass is exchanged between system and surroundings

(d) Only energy is exchanged between system and surroundings

54. A closed system is one in which

(a) Both mass as well as energy is exchanged between system and surroundings

(b) Neither mass nor energy is exchanged between system and surroundings

(c) Only mass is exchanged between system and surroundings

(d) Only energy is exchanged between system and surroundings

55.An isolated system is one in which

(a) Both mass as well as energy is exchanged between system and surroundings

(b) Neither mass nor energy is exchanged between system and surroundings

(c) Only mass is exchanged between system and surroundings

(d) Only energy is exchanged between system and surroundings

56.Which of the following is not an intensive property

(a) Volume

(b) Temperature

(c) Pressure

(d) All

57.Which of the following is an extensive property

(a) Volume

(b) Temperature

(c) Pressure

(d)All

58. Which of the following is a state function

(a) Internal energy

(b) Enthalpy

(c) Heat capacity

(d)All

59. Which of the following is a path function

(a) Heat

(b) Work

(c) Both a & b

(d) Internal energy

60. For any process in a closed system the mathematical formulation of the First Law of Thermodynamics is

(a) $\Delta U = q + w$

(b) $H = q + w$

(c) $H = U + PV$

(d) $\Delta H = 0$

61. For acyclic process

(a) $\Delta U = 0$

(b) $\Delta U \geq 0$

(c) $\Delta U \neq 0$

(d) $\Delta U = 1$

62. Enthalpy is defined as

(a) $\Delta U = q + w$

(b) $H = q + w$

(c) $H = U + PV$

(d) $\Delta H = 0$

63. In an isothermal process

(a) Temperature is constant

(b) Volume is constant

(c) Pressure is constant

(d) Heat is constant

64.In an adiabatic process

(a) Temperature is constant

(b) Volume is constant

(c) Pressure is constant

(d) Heat is constant

65.In an isobaric process

(a) Temperature is constant

(b) Volume is constant

(c) Pressure is constant

(d) Heat is constant

66.In an isochoric process

(a) Temperature is constant

(b) Volume is constant

(c) Pressure is constant

(d) Heat is constant

67. for a perfect gas the internal energy U, is a function of

(a) Temperature only

(b) Volume only

(c) Pressure only

(d) All

68. For a reversible isothermal process in a perfect gas

(a) $\Delta U = 0$

(b) $\Delta U \geq 0$

(c) $\Delta U \neq 0$

(d) $\Delta U = 1$

69. For an adiabatic expansion of a perfect gas

(a) $q = 0$

(b) $w = 0$

(c) $\Delta U = 0$

(d) All

70. For an ideal gas Joule-Thomson effect is

(a) Zero

(b) More than Zero

(c) Less than Zero

(d) One

71. Joule-Thomson effect is

(a) an isothermal process

(b) adiabatic process

(c) Isenthalpic process

(d) both b&c

72. The temperature at which Joule-Thomson coefficient changes its sign is called

(a) Boyle`s Temperature

(b) Inversion Temperature

(c) Critical Temperature

(d) Reduced Temperature

73. At Inversion temperature the value of Joule-Thomson coefficient is

(a) Zero

(b) More than Zero

(c) Less than Zero

(d) One

74.Joule- Thomson coefficient (μ_{JT}) is defined as

(a) $\mu_{JT} = \left(\frac{\partial T}{\partial P}\right)_H$

(b) $\mu_{JT} = \left(\frac{\partial V}{\partial P}\right)_H$

(c) $\mu_{JT} = \left(\frac{\partial T}{\partial V}\right)_H$

(d) $\mu_{JT} = \left(\frac{\partial T}{\partial P}\right)_V$

75. Internal energy is

(a) an state function

(b) an intensive property

(c) an extensive property

(d) both a & c

(D) Thermo-chemistry:

76. For an Exothermic process

(a) $\Delta H = 0$

(b) ΔH is always negative

(c) ΔH is always positive

(d) All

77. For an Endothermic process

(a) $\Delta H = 0$

(b) ΔH is always negative

(c) ΔH is always positive

(d) All

78. A reaction with a negative value of ΔG is referred to as an

(a) Endergonic Reaction

(b) Exergonic Reaction

(c) Isoenthalpic Reaction

(d) Adiabatic Reaction

79. A reaction with a positive value of ΔG is referred to as an

(a) Endergonic Reaction

(b) Exergonic Reaction

(c) Isenthalpic Reaction

(d) Adiabatic Reaction

80. Enthalpy of combustion is

(a) Always Zero

(b) Always negative

(c) Always positive

(d) All of these

81. An adiabatic bomb calorimeter is used to measure

(a) Heat of combustion

(b) Heat of formation

(c) Heat of vaporization

(d) Heat of neutralization

82. A reaction run at constant pressure in a system with P-V work only the value of ΔH is

(a) Always zero

(b) Always equal to heat flowing to system

(c) Less than the heat flowing to system

(d) Infinite

83. The procedure of combining heats of several reactions to obtain the heat of a desired reaction is known as

(a) Charl`s Law

(b) Boyle`s Law

(c) Hess`s Law

(d) Kirchhoff’s Law

84. For an ideal gas

(a) Cpm - Cvm = R

(b) Cpm - Cvm = R/T

(c) Cvm - Cpm = R

(d) Cpm - Cvm = R/P

85. The temperature dependence of reaction enthalpy is given by

(a) Charles`s Law

(b) Boyle`s Law

(c) Hess`s Law

(d) Kirchhoff’s Law

86. The enthalpy of all the elements in their standard state is

(a) Always zero

(b) Always negative

(c) Always positive

(d) Unity

87. According to Hess’s Law, the enthalpy changes for a reaction

(a) Depends on path

(b) The sum of ΔU and ΔH

(c) Independent of the path

(d) None of these

88. The enthalpy of formation of a compound is

(a) Always Positive

(b) Either positive or negative

(c) Always negative

(d) None of the above

89. On the basis of thermochemical equations (i), (ii) and (iii), find out which of the algebric relationships given in options (a) to (d) is correct.

(i) C (graphite) + O2 (g) → CO2 (g); $\Delta r H = x$ kJ mol^{-1}

(ii) C (graphite) + 1 2 O2 (g) → CO (g); $\Delta r H = y$ kJ mol^{-1}

(iii) CO (g) + 12 O_2 (g) → CO_2; $\Delta r H = z$ kJ mol^{-1}

(a) $z = x + y$

(b) $x = y – z$

(c) $x = y + z$

(d) $y = 2z – x$

90. Consider the reactions given below.

(i) C (g) + 4 H (g) → CH_4 (g); $\Delta r H = x$ kJ mol^{-1}

(ii) C (graphite, s) + $2H_2$ (g) → CH_4 (g); $\Delta r H = y$ kJ mol^{-1}

On the basis of above reactions find out which of the algebric relations given in options (a) to (d) is correct?

(a) $x = y$

(b) $x = 2y$

(c) $x > y$

(d) $x < y$

91. Hess`s law is applicable for the determination of

(a) Heat of transition

(b) Heat of formation

(c) Heat of combustion

(d) All

92. Enthalpy of sublimation of a substance is equal to

(a) Enthalpy of fusion + enthalpy of vapourisation

(b) Enthalpy of fusion

(c) Enthalpy of vapourisation

(d) Twice the enthalpy of vapourisation

93. In an exothermic reaction, heat is evolved, and system loses heat to the surrounding. For such system

(a) q_p will be negative

(b) Δ_r H will be negative

(c) q_p will be negative

(d) Δ_r H will be positive

94. Which of the following does not represent enthalpy change during phase transformation

(a) Standard enthalpy of vaporization

(b) Standard enthalpy of fusion

(c) Standard enthalpy of sublimation

(d) Standard enthalpy of formation

95. The enthalpy of neutralization of which of the following acids and bases is nearly – 13.6 kcal

(a) HCl and KOH

(b) HCN and NaOH

(c) HCl and NH_4OH

(d) None

96.Enthalpy of neutralization of all strong acids and bases has the same value due to the:

(a) Formation of salt and water
(b) Formation of salt
(c) The complete ionization of acid and base
(d) The combination of $H^+$and OH^-ions to form water

97. The heat of neutralization is the highest in the following case

(a) A strong acid and a weak base
(b) A weak acid and a strong base
(c) A strong acid and a strong base
(d) A weak acid and a weak base

98. For the reaction

$NaOH + HCl \rightarrow NaCl + H_2O$

The change in enthalpy is called

(a) Enthalpy of formation

(b) Standard enthalpy of combustion

(c) Standard enthalpy of sublimation

(d) Standard enthalpy of neutralization

99. Hess's law is a consequence of

(a) First law of thermodynamics

(b) Second law of thermodynamics

(c) Third law of thermodynamics

(d) Zeroth law of thermodynamics

100. Which of the correct order of bond energy of single, double and triple bonds between carbon atoms

(a) C-C > C=C > C≡C

(b) C-C < C=C > C≡C

(c) C-C > C=C < C≡C

(d) C-C < C=C < C≡C

Paper-II (Group B)

Quantitative and Qualitative Analysis

1. Lassaigne's filtrate is the aqueous extract of fused material of organic compound with-
   (a) Rb
   (b) Cs
   (c) Na
   (d) K

2. Lassaigne's filtrate may contain-
   (a) NaCN
   (b) NaCl
   (c) Na_2S
   (d) All of these

3. Treatment of Lassaigne's filtrate with freshly prepared ferrous sulphate solution followed by ferric chloride solution and dilute sulphuric acid is a methodology to detect-
   (a) S
   (b) P
   (c) N
   (d) Cl

4. If Lassaigne's filtrate is treated with freshly prepared ferrous sulphate solution followed by ferric chloride solution and dilute sulphuric acid, prussian blue colour is developed. It is due to-
   (a) $Fe_4[Fe(CN)_6]_3$
   (b) $Na_4[Fe(CN)_6]$
   (c) $Fe(CN)_2$
   (d) None of these

5. Lassaigne's filtrate will contain NaCN if the organic compound under examination contain-
   (a) N
   (b) S
   (c) Cl

(d) Br

6. Prussian blue colour obtained in test of nitrogen from Lassaigne's filtrate is due to-
   (a) Ferroferricyanide
   (b) Ferriferrocyanide
   (c) Sodium ferrocyanide
   (d) None of these

7. To prepare Lassaigne's filtrate, fusion of organic compound with sodium is done in-
   (a) Test tube
   (b) Hard glass test tube
   (c) Fusion tube
   (d) All of these

8. Nature of Lassaigne's filtrate is-
   (a) Acidic
   (b) Alkaline
   (c) Neutral
   (d) Acidic or alkaline

9. Alkaline nature of Lassaigne's filtrate is due to-
   (a) NaOH
   (b) KOH
   (c) $Ca(OH)_2$
   (d) $Ba(OH)_2$

10. If organic compound contain sulphur, then the Lassaigne's filtrate obtained from it, must have-
   (a) NaCN
   (b) Na_2S
   (c) NaCl
   (d) NaBr

11. Development of violet colour on addition of sodium nitroprusside in Lassaigne's filtrate confirms the presence of-
    (a) N
    (b) S
    (c) Cl
    (d) Br

12. Treatment of Lassaigne's filtrate with acetic acid and lead acetate solution produces black precipitate. It confirms the presence of-
    (a) N
    (b) S
    (c) Cl
    (d) Br

13. Presence of halogen in Lassaigne's filtrate may be carried out by-
    (a) $AgNO_3$
    (b) $BaCl_2$
    (c) $FeSO_4$
    (d) $Pb(OCOCH_3)_2$

14. Formation of precipitate on treatment of Lassaigne's filtrate with dilute nitric acid and silver nitrate solution confirms the presence of-
    (a) N
    (b) S
    (c) Halogen
    (d) None of these

15. Which of the following methods is used to estimate nitrogen in the given organic compound?
    (a) Duma's method
    (b) Kjeldahl's method
    (c) Both (a) and (b)
    (d) None of these

16. With the help of Duma's method, we can estimate-
    (a) N
    (b) S
    (c) P
    (d) Halogen

17. Which of the following method is suitable to estimate sulphur?
    (a) Duma's method
    (b) Kjeldahl's method
    (c) Carius method
    (d) None of these

18. With the help of Carius method, we can estimate-
    (a) N
    (b) S
    (c) C
    (d) H

19. What amount of sulphur is present in 233 g of barium sulphate (atomic mass of Ba=137)?
    (a) 16 g
    (b) 32 g
    (c) 8 g
    (d) 137 g

20. Molecular mass of organic acid may be determined by-
    (a) Duma's method
    (b) Kjeldahl's method
    (c) Chloroplatinate method
    (d) Silver salt method

21. What amount of silver is obtained by ignition of I mL of silver acetate?
    (a) 47 g
    (b) 108 g
    (c) 29 g

(d) None of these

22. Molecular mass of organic base (amine) may be determined by-
    (a) Duma's method
    (b) Kjeldahl's method
    (c) Chloroplatinate method
    (d) Silver salt method

Structure and Bonding

23. Which type of hybridization is seen in the carbon of methane?
    (a) sp
    (b) sp^2
    (c) sp^3
    (d) sp^3d^2

24. The sp hybridization is seen in the carbon of-
    (a) Methane
    (b) Ethane
    (c) Ethene
    (d) Ethyne

25. Carbon of ethene is-
    (a) sp^3-hybridized
    (b) sp^2-hybridized
    (c) sp-hybridized
    (d) sp^3d^2-hybridized

26. Which type of hybridization is associated with middle carbon of allene ($HC_2=C=CH_2$)?
    (a) sp^3
    (b) sp^2

(c) sp
(d) sp^3d^2

27. Bond length of C-C double bond in ethene-
(a) 1.54 A°
(b) 1.34 A°
(c) 1.20 A°
(d) None of these

28. Methane is-
(a) Tetrahedral
(b) Trigonal planar
(c) Linear
(d) Octahedral

29. Bond length of C-C double bond in benzene is-
(a) 1.54
(b) 1.34
(c) 1.20
(d) None of these

30. Correct order of C-H bond length of ethane, ethene and ethyne is-
(a) C-H (ethane) > C-H(ethene) > C-H(ethyne)
(b) C-H (ethane) > C-H(ethyne) > C-H(ethene)
(c) C-H (ethyne) > C-H(ethene) > C-H(ethane)
(d) C-H (ethene) > C-H(ethyne) > C-H(ethane)

31. Which type of hybridization is associated with oxygen of water?
(a) sp^3
(b) sp^2
(c) sp
(d) sp^3d^2

32. Which type of hybridization is associated with N of ammonia-
    (a) sp^3
    (b) sp^2
    (c) sp
    (d) sp^3d^2

33. The bond angle in water is-
    (a) 109.5°
    (b) 120°
    (c) 107°
    (d) 104.5°

34. The bond angle in ammonia is-
    (a) 109.5°
    (b) 120°
    (c) 107°
    (d) 104.5°

35. The number of sigma bonds and pi-bonds in one molecule of ethene are-
    (a) Five sigma and one pi
    (b) One sigma and five pi
    (c) Four sigma and two pi
    (d) Two sigma and four pi

36. The H-bonding is strongly observed in-
    (a) Cl_2
    (b) NO
    (c) HF
    (d) None of these

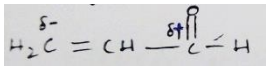
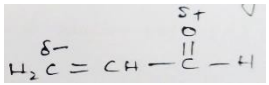
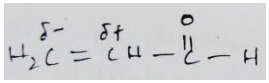
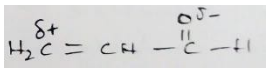
37. The H-bonding is not observed in-
    (a) HF
    (b) H_2O
    (c) C_2H_5OH

(d) CH_3OCH_3

38. Types of hybridization in carbon with 1 and 2 mark NC(1)-C(2)=$CH_2$are-
    (a) sp and sp^2
    (b) sp and sp^3
    (c) sp^3 and sp^2
    (d) sp^3 and sp^3

39. Boiling point of ethyl alcohol is higher than its isomeric ether. It can be explained by-
    (a) Covalent bonding
    (b) Coordinate bonding
    (c) H-Bonding
    (d) Van der Waal's force of attraction

40. C-C bond length in benzene is-
    (a) Greater than 1.54 A°
    (b) Less than 1.34 A°
    (c) Less than 1.20 A°
    (d) In between 1.54 A° and 1.34 A°

41. Polarization of electrons in acrolein may be written as-
    (a) 
    (b) 
    (c) 
    (d) 

42. Amongst the following, the most basic compound is-
    (a) Benzylamine
    (b) Aniline
    (c) Acetanilide

(d) p-Nitroaniline

43. Amongst the following, the strongest acid is-
    (a) CH_3COOH
    (b) $ClCH_2COOH$
    (c) $Cl_2CHCOOH$
    (d) Cl_3CCOOH

44. Among the following, the strongest base is-
    (a) $C_6H_5NH_2$
    (b) p-$NO_2C_6H_4NH_2$
    (c) m-$NO_2C_6H_4NH_2$
    (d) $C_6H_5CH_2NH_2$

45. Among the following, which is the strongest acid-
    (a) CH_3COOH
    (b) $ClCH_2COOH$
    (c) F-CH_2COOH
    (d) NO_2CH_2COOH

46. Which of the following represents the given mode of hybridization sp^2-sp^2-sp-sp from left to right?
    (a) CH_2=CH-C≡N
    (b) CH≡C-C≡CH
    (c) CH_2=C=C=CH_2
    (d) CH≡C-CH=CH_2

Reaction Mechanism

47. Which is formed in hemolytic fission?

(a) Cation
(b) Anion
(c) Free radical
(d) All of these

48. Which is formed in heterolytic fission of covalent bond-
(a) Cation
(b) Anion
(c) Cation and anion
(d) Free radical

49. Energy released or absorbed in a chemical bond formation or dissociation is measured in which of the following unit?
(a) Kelvin
(b) Joule
(c) Pascal
(d) Mol

50. Stability of free radical may be explained on the basis of-
(a) Electromeric effect
(b) Hyperconjugation
(c) Mesomeric effect
(d) All of these

51. The hybridization of carbocation is-
(a) sp
(b) sp^2
(c) sp^3
(d) sp^3d^2

52. The shape of carbocation is-
(a) Pyramidal
(b) Bent
(c) Linear

(d) Trigonal planar

53. How many electrons are present in the valence shell of carbon of methyl carbocation?
    (a) 3
    (b) 4
    (c) 5
    (d) 6

54. Positive charge of carbocation can be dispersed by-
    (a) +I effect of alkyl group
    (b) Resonance in allyl or benzyl carbocation
    (c) Hyperconjugation in 1°, 2° and 3° carbocations
    (d) All of these

55. The formal charge at the carbocation is equal to-
    (a) -1
    (b) 0
    (c) +1
    (d) +2

56. Which of the following free radical has the maximum ease of formation?
    (a) 1°
    (b) 2°
    (c) 3°
    (d) 4°

57. Which of the following carbocation has maximum ease of formation?
    (a) 1°
    (b) 2°
    (c) 3°
    (d) 4°

58. Which radical is the most stable?

(a) CH_3-CH(CH_3)-CH_2-$\dot{C}H_2$
(b) CH_3-CH(CH_3)-$\dot{C}H$-CH_3
(c) CH_3-$\dot{C}$(CH_3)-CH_2-CH_3
(d) $\dot{C}H_2$-CH(CH_3)-CH_2-CH_3

59. Which radical is the most stable?
(a) CH_3-CH=CH-CH_2-$\dot{C}H_2$
(b) CH_3-CH=$\dot{C}$-CH_2-CH_3
(c) $\dot{C}H_2$-CH=CH-CH_2-CH_3
(d) CH_3-CH=CH-$\dot{C}H$-CH_3

60. Which radical is the most stable?
(a) CH_3-CH_2-$\dot{C}H$-Ph
(b) CH_2=CH-$\dot{C}H$=CH_3
(c) CH_3-CH_2-$\dot{C}$(CH_3)-CH_3
(d) CH_2=CH-$\dot{C}H$-CH_3

61. Which of the following bond is most likely to break homolytically?
(a) H-Cl
(b) Cl-Cl
(c) C-Cl
(d) C-H

62. When an O-H bond breaks heterolytically, to which atom does the valence electron pair moves?
(a) H
(b) O
(c) Both (a) and (b)
(d) Impossible to H

63. Which of the following is an initiator molecule in the free radical polymerization?
(a) Benzoyl peroxide
(b) Sulphuric acid
(c) Potassium permagnate

(d) Chromium oxide

64. Free radicals are electrically-
(a) Positively charged
(b) Negatively charged
(c) Neutral
(d) All of these

65. Carbanion is electrically-
(a) Positively charged
(b) Negatively charged
(c) Neutral
(d) All of these

66. Cyanide ion is-
(a) Electrophile
(b) Ambident nucleophile
(c) Free radical reagent
(d) All of these

67. Methyl carbocation is-
(a) Electrophile
(b) Nucleophile
(c) Ambident nucleophile
(d) Ambiphile

68. Carbocation is-
(a) Positively charged
(b) Negatively charged
(c) Neutral
(d) All of these

69. When the nucleophile, R-$\bar{\bar{O}}^{-}$ attacks the RX, the resultant product will be-

(a) ROH
(b) ROR
(c) RCN
(d) RNHR

70. Select the correct statement-
(a) SN_2 reaction follows second order kinetics
(b) No intermediate is involved in SN_2
(c) SN_2 reaction are one step reaction
(d) All of these

71. The reactivity order of alkyl halide in SN_2 is-
(a) $CH_3X > 1° > 2° > 3°$
(b) $CH_3X > 1° > 3° > 2°$
(c) $CH_3X > 2° > 1° > 3°$
(d) $CH_3X > 3° > 2° > 1°$

ALCOHOLS

72. Alcohols contain-
(a) –CHO group
(b) –OH group
(c) –CN group
(d) –CO- group

73. Which is the only alcohol that can be prepared by the indirect hydration of alkene?
a) Ethyl alcohol
b) Propyl alcohol
c) Isobutyl alcohol
d) Methyl alcohol

74. Acid catalysed hydration of alkenes except ethene leads to the formation of which of the following?
    a) Mixture of secondary and tertiary alcohols
    b) Mixture of secondary and primary alcohols
    c) Secondary or tertiary alcohol
    d) Primary alcohol

75. Among the alkenes which one produces tertiary butyl alcohol on acid hydration?
    a) $(CH_3)_2C=CH_2$
    b) CH_3-CH=CH-CH_3
    c) $CH_3CH_2CH=CH_2$
    d) $CH_3CH=CH_2$

76. Which of the following way is not a method of preparation of alcohol?
    a) Grignard reaction
    b) Reduction of an aldehyde, ketone, or carboxylic acid with the appropriate reducing agent
    c) Substitution reaction of hydroxide or water on the appropriate alkyl halide
    d) Haber's process

77. Which one of the following compounds is obtained by the oxidation of primary alcohol with nascent oxygen?
    a) Alkanal
    b) Alkanone
    c) Ether
    d) Amine

78. Which one of the following compound is obtained by the oxidation of secondary alcohols by [O]?
    a) Ketone
    b) Aldehyde
    c) Ether
    d) Amine

79. Secondary alcohols on catalytic dehydrogenation by Cu-Ni couple gives _____
    a) Ketone
    b) Aldehyde
    c) Carboxylic acid
    d) Amine

80. The reaction of carboxylic acids with alcohols catalysed by conc. H_2SO_4 is called _____

a) Dehydration
b) Saponification
c) Esterification
d) Neutralization

81. Which one is the correct order of reactivity of different types of alcohol towards hydrogen halide?

a) 1° alcohol > 2° alcohol > 3° alcohol
b) 2° alcohol > 1° alcohol > 3° alcohol
c) 3° alcohol > 1° alcohol > 2° alcohol
d) 3° alcohol > 2° alcohol > 1° alcohol

82. The dehydration of alcohols is an example of _____

a) Bimolecular elimination/E2 reaction
b) SN2 reaction
c) SN1 reaction
d) Unimolecular elimination/E1 reaction

83. Lucas test is for-

(a) Ketones
(b) Amines
(c) Alcohols
(d) Aldehydes

84. Lucas reagent is-

(a) Solution of HCl and $ZnCl_2$
(b) Solution of HCl and $AlCl_3$
(c) Solution of $ZnCl_2$ and $AlCl_3$
(d) Solution of HNO_3 and HCl

85. Structure of ethylene glycol is -

(a) CH_3CH_2OH
(b) $CH_3CH_2CH_2OH$
(c) $OHCH_2CH_2OH$
(d) $OHCH_2CH_2CH_2OH$

86. Propanol is-
(a) C_2H_5OH
(b) C_3H_7OH
(c) C_4H_9OH
(d) CH_3OH

87. Glycerol is a-
(a) Monohydric alcohol
(b) Dihydric alcohol
(c) Trihydric alcohol
(d) Aromatic alcohol

88. Which one of the following has both primary and secondary -OH group-
(a) Ethanol
(b) Propanol
(c) Glycerol
(d) Glycol

89. Final product of the reaction of glycerol with PCl_5 –
(a) 1,2,3-Trichloro propane
(b) Glycol
(c) 1,2-Dichloroethane
(d) Allyl alcohol

90. Which one of the following is the product of the reaction of natural fats and NaOH-
(a) Glycol
(b) Ethanol
(c) Propanol
(d) Glycerol

organometallic compounds

91. Which of the following is an organometallic compound

(a) Alkylmagnesium bromide

(b) Dimethylzinc

(c) Dimethylcadmium

(d) All

92. **Which of the following is Grignard reagent**

(a) R-Mg-X

(b) R-Zn-X

(c) R-Cd-X

(d) None

93. Which of the following is not an organometallic compound

(a) Methyl magnesium bromide

(b) Butyllithium

(c)Dimethyl ether

(d) Diethylzinc

94. Which of the following organometallic compounds contains halogen

(a) Organolithium compound

(b) Organozinc compound

(c) Organocadmium compound

(d) Organo magnesium compound

95. Which bond is characteristic for organometallic compounds

(a) Carbon-Metal bond

(b) Carbon-Nitrogen bond

(c) Carbon-Carbon bond

(d) All

96. Methyl cyanide is formed when

(a) Methyl magnesium iodide reacts with cyanogen

(b) Methyl alcohol reacts with cyanogen

(c) Methyl amine and reacts with cyanogen

(d) None

97. Diethyl zinc is prepared by the reaction of

(a) Methyl iodide and Zn

(b) Methyl alcohol and Zn

(c) Methyl amine and Zn

(d) None

98. Which of the following combinations results in the formation of a Gilman reagent

(a) Alkyl bromide + Cu

(b) Alkyl bromide + CuI

(c) Alcohol + CuI

(d) Alkyl lithium + CuI

99. Which of the following functional groups gives tertiary alcohol using the Grignard reaction?

(a) Ketone

(b) Aldehyde

(c) Alcohol

(d) Carboxylic acid

100. Which of the following statement is true?

(a) Organometallic compounds contain carbon-metal bond

(b) Organometallic compounds contain carbon-halogen bond

(c) Organometallic compounds contain carbon-carbon bond

(d) All

101. Which of the following compounds is Grignard reagent

(a) Phenyl magnesium bromide

(b) Vinyl magnesium chloride

(c) Allyl magnesium iodide

(d) All

102. Alkyl magnesium iodide reacts with compounds having acidic hydrogen giving

(a) Alcohol

(b) Ether

(c) Alkane

(d)Carboxylic acid

103. Methyl magnesium iodide reacts with Allyl bromide to give

(a) 2-Butene

(b) Butane

(c) 1-Butene

(d) I-Butanol

104. Methyl magnesium iodide reacts with chloroamine to give

(a) Methyl Chloride

(b) Methyl amine

(c) Methyl iodide

(d) None

105. Methyl magnesium iodide reacts with ethylene oxide to produce

(a) Alcohol

(b) Amine

(c) Aldehyde

(d) Carboxylic acid

106. Methyl magnesium iodide reacts with formaldehyde to form

(a) Primary Alcohol

(b) Tertiary Alcohol

(c) Secondary Alcohol

(d) None

107. Methyl magnesium iodide reacts with acetone to form

(a) Primary Alcohol

(b) Tertiary Alcohol

(c) Secondary Alcohol

(d) None

108. Ethyl magnesium iodide reacts with acetaldehyde to form

(a) Primary Alcohol

(b) Tertiary Alcohol

(c) Secondary Alcohol

(d) None

109. Which of the following is obtained when Grignard reagent reacts with acid chloride

(a) Acetone

(b) Alcohol

(c) Aldehyde

(d) Alkane

110. **Which of the following is obtained when methyl magnesium halide reacts with carbon** dioxide

(a) Acetic acid

(b) Acetaldehyde

(c) Ethanol

(d) None

111. Which of the following is obtained when methyl lithium reacts with epoxide

(a) Propionic acid

(b) Acetaldehyde

(c) n-propyl alcohol

(d) None

organosulphur compounds

112. **Which of the following compound does not contain C-S bond**

(a) Methyl thioalcohol

(b) Diethyl thioether

(c)Ethyl thioacetate

(d) Ethyl acetate

113. **Which of the following term is true for -SH group**

(a) Sulphohydryl

(b) Thiol

(c) Mercapto

(a) All

114. **Which of the following products is formed when sodium hydrosulphide reacts with ethyl bromide**

(a) Thiourea

(b) Methanethiol

(c) Ethanethiol

(d) Acetamide

115. **Which of the following compounds has highest boiling point**

(a) Methanethiol

(b) Ethanethiol

(c) Propanethiol

(d) Dimethylsulphide

116. **Which of the following is not correct**

(a) Ethanethiol on reaction with metallic sodium gives sodium mercaptide

(b) Acetic acid on reaction with ethanethiol gives ethyl thioacetate

(c) Acetyl chloride on reaction with 1-propanethiol gives n-propyl thioacetate

(d) Methanethiol on reaction with metallic sodium gives sodium mercaptide

117. **Which of the following products is formed when Aldehyde reacts with**

thiol

(a) Diethyl methyl mercaptal

(b) Dimethyl methyl mercaptal

(c) Diethyl dimethyl mercaptol

(d) Formaldehyde diethyl thioacetal

118. **Which of the following products is formed when thiol undergoes oxidation**

(a) Sulphonic acid

(b) Sulphenic acid

(c) Sulphinic acid

(d) All

119. **Sulphone can be synthesized from**

(a) Thiol

(b) Sulphide

(c) Aldehyde

(d) Acetamide

120. **How many O (oxygen) atoms are present in sulphone**

(a) 1

(b) 2

(c) 3

(d) None

121. **Which of the following is product of diethyl sulphide**

(a) Sulphone

(b) Sulphoxide

(c) Diethyl sulphide dibromide

(d) All

122. **Sulphonium salt contains**

(a) 3 oxygen atoms

(b) 2 oxygen atoms

(c) 1 oxygen atom

(d) No oxygen

123. **Which of the following is oxidised product of diethyl sulphide**

(a) Diethyl sulphoxide

(b) Dimethylsulphoxide

(c) Dimethyl sulphone

(d) None

124. **Which of the following compound contains -S-S- bond**

(a) Sulphonamide

(b) Sulphone

(c) Suphonic acid

(d) Diethyldisulphide

125. DMSO is the product of dimethyl sulphoxide by which of the following

reaction

(a) Oxidation

(b)Hydrolysis

(c) Reduction

(d) Ozonolysis

126. **131.Which of the following is an organosulphur compound**

(a) Sulphone

(b) Acetone

(c) Benzophenone

(d) Acetamide

127. **What is methylmercaptan**

(a) CH_3OH

(b) CH_3NC

(c) CH_3SH

(d) CH_3NH_2

128. **What is the product of ethanethiol and metallic sodium**

(a) Sodium mercaptide

(b) Sodium ethoxide

(c) Sodium isocyanide

(d) Ethanol

129. **Ethyl sulphonic acid is obtained by oxidation of which of the following compounds**

(a) Acetaldehyde

(b) Ethanethiol

(c) Ethanol

(d) Acetamide

130. **Which compound is obtained by the action of ethylbromide on thiourea and subsequent hydrolysis**

(a) Urea

(b) Ethanol

(c) Acetone

(d) Acetamide

131. **What is the hybridization of sulphur in methane thiol**

(a) sp^3

(b) sp^2

(c) sp

(d) sp^3d

CARBONYL COMPOUNDS (ALDEHYDES AND KETONES)

132. Which one of the following functional groups is aldehydic group-

(a) –CO-
(b) –OH
(c) –COOH
(d) –CHO

133. Ketonic group is-

(a) –CHO
(b) –CO-
(c) –OH
(d) –COOH

134. Which of the following compounds do not contain a carbonyl group?

a) Alcohol
b) Aldehyde
c) Ketone
d) Carboxylic acid

135. How many carbon atoms does formaldehyde have?

a) 0
b) 1
c) 2
d) 3

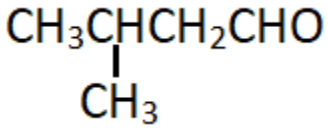
136. What is the common name of butanal?

a) n-Butanaldehyde
b) α-Butanaldehyde
c) n-Butyraldehyde
d) α-Butyraldehyde

137. What is the common name of the compound which has a CHO group attached to the sp^2 hybridised carbon of a benzene ring?

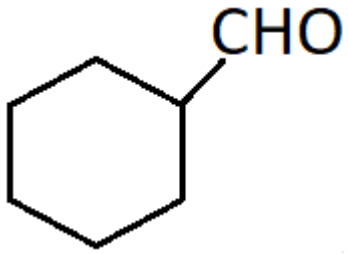
a) Benzanal
b) Benzaldehyde
c) Benzenecarbaldehyde
d) Phthaldehyde

138. Which of the following is the incorrect name for the following compound?



a) 3-Methylbutanal
b) β-Methylbutyraldehyde
c) γ-Methylbutyraldehyde
d) Isovaleraldehyde

139. What is the correct IUPAC naming of the compound shown?



a) Benzenecarbaldehyde
b) Cyclohexanal
c) Cyclohexyl aldehyde
d) Cyclohexanecarbaldehyde

140. Which of the following is not a use of formaldehyde?
a) Preservation of biological specimens
b) Manufacturing of bakelite
c) Silvering of mirrors
d) Preparation of acetic acid.

141. Which of the following methods cannot produce aldehydes?
a) Oxidation of primary alcohols
b) Dehydrogenation of secondary alcohols
c) Ozonolysis of alkenes
d) Hydration of ethyne with acid

142. Which of the following reactions can produce ketones?
a) Oxidation of primary alcohols
b) Dehydrogenation of primary alcohols
c) Dehydrogenation of tertiary alcohols
d) Oxidation of secondary alcohols

143. What is the catalyst used in the hydrogenation of acetyl chloride to produce ethanal?
a) Pt over $BaSO_4$
b) Pt over $CuSO_4$
c) Pd over $BaSO_4$
d) Pd over $CuSO_4$

144. What is the name of the process in which aldehyde gets oxidised in presence of air?

a) Calcination
b) Autoxidation
c) Cannizzaro reaction
d) Baeyer villiger oxidation

145. What will be the product if we add water to the aldehyde?
a) Alcohols
b) Epoxides
c) Geminaldiols
d) Peroxides

146. Compound which gives acetone on ozonolysis is?
a) $CH_3-CH=CH-CH_3$
b) $(CH_3)_2C=C(CH_3)_2$
c) $C_6H_5CH=CH_2$
d) $CH_3CH=CH_2$

147. 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

148. Isopropyl alcohol on oxidation gives which of the following?
a) Acetone
b) Acetaldehyde
c) Ether
d) Ethylene

149. Dry heating of calcium acetate gives which of the following?
a) Acetaldehyde
b) Ethane
c) Acetic acid
d) Acetone

150. The nucleophilic addition reactions of aldehydes are carried out in _____ medium.
a) neutral
b) acidic

c) weakly basic
d) extremely basic

151. What is the correct order of reactivity of the following towards nucleophilic addition?
a) Methanal>Ethanal> Acetone
b) Acetone >Ethanal>Methanal
c) Methanal> Acetone >Ethanal
d) Ethanal>Methanal> Acetone

CARBOXYLIC ACIDS

152. Carboxylic functional group is-
(a) –COOH
(b) –CHO
(c) $–SO_3H$
(d) –OH

153. 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

154. Acetic acid is manufactured by the fermentation of which of the following reaction?
a) Ethanol
b) Methanol
c) Ethanal
d) Methanal

155. Formic acid is obtained when which of the given reaction occurs?
a) Calcium acetate is heated with conc. H_2SO_4
b) Calcium formate is heated with calcium acetate

c) Glycerol is heated with oxalic acid at 110℃
d) Acetaldehyde is oxidised with $K_2Cr_2O_7$ and H_2SO_4

156. The below reaction is called as which of the following name reaction?

$$CH_3CH = CH_3 \xrightarrow[H^+]{CO+H_2O} CH_3 - \underset{\underset{COOH}{|}}{CH} - CH_3$$

a) Wurtz reactions
b) Koch reaction
c) Clemenson's reduction
d) Kolbe's reaction

157. The reaction of carboxylic acids with $NaHCO_3$ produces (which helps to differentiate it from phenols.)
a) H_2O
b) CO
c) CO_2
d) NaCl

158. The pK_a value is equivalent to _____
a) $logK_a$
b) $-logK_a$
c) $logK_{eq}$
d) $-logK_{eq}$

159. Which of the following is the strongest acid?
a) Acetic acid
b) Propanoic acid
c) Isobutyric acid
d) 2,2-Dimethylpropanoic acid

160. Which of the following is the strongest acid?
a) CH_3COOH
b) $CH_2ClCOOH$
c) $CHCl_2COOH$
d) CCl_3COOH

161. Which of the following has the highest pK_a value?
a) Bromoacetic acid

b) Chloroacetic acid
c) Fluoroacetic acid
d) Iodoacetic acid

162. Which of the following will have the highest acidic strength?
a) Butanoic acid
b) 2-Chlorobutanoic acid
c) 3-Chlorobutanoic acid
d) 4-Chlorobutanoic acid

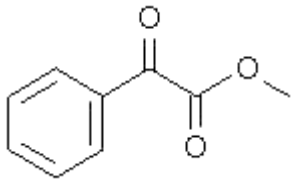
163. Ester has the functional group-
(a) –COOH
(b) –OR
(c) –COOR
(d) –X

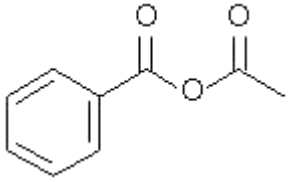
164. Amides have the functional group-
(a) $–NH_2$
(b) –COOR
(c) $–CONH_2$
(d) –COCl

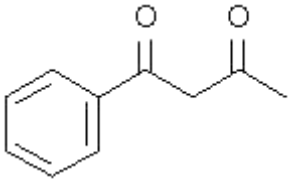
165. Acid chlorides have the following functional group-
(a) –CONH-
(b) –Cl
(c) –CN
(d) –COCl

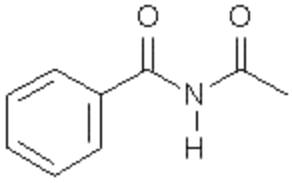
166. What will be the reactivity order of the following with water?
a) acid halide > ester > acid anhydride > amide
b) acid anhydride > amide > acid halide > ester
c) amide > ester > acid anhydride > acid halide
d) acid halide > acid anhydride > ester > amide

167. Which of the following is an anhydride?

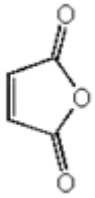
a) 

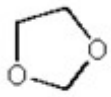
b) 

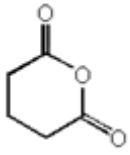
c) 

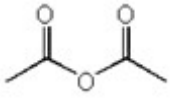
d) 

168. Which of the following compounds is not an acid anhydride?

a) 

b) 

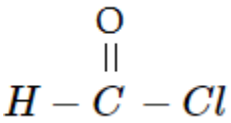
c) 

d) 

169. Which product is formed when acid anhydride is hydrolyzed?

a) Aldehyde
b) Ketone
c) Alcohols
d) Carboxylic acid

170. Name of the given compound is ?



a) Acetyl chloride
b) Formyl chloride
c) Chloretone
d) Oxochloromethane

171. When formic acid reacts with PCl_5 it forms which of the following?

a) Formyl chloride
b) Acetyl chloride
c) Methyl chloride
d) Propionyl chloride

Questions based on organic compounds of nitrogen

172. **Which of the following is formed when methanol reacts with ammonia?**

(a) Methylamine

(b) Secondary amine

(c) Aldehyde

(d) Alcohol

173. **Which of the following is correct?**

(a) Reduction of nitroalkane gives alkylamine

(b) Reduction of amides gives primary amine

(c) Reduction of alkyl cyanide gives primary amine

(d) All

174. **In which of the following reactions amide is converted to amine?**

(a) Claisen

(b) Hoffmann

(c) Kekule

(d) Perkin

175. **Which of the following is formed from the reaction of an aldehyde and primary amine?**

(a) Ketone

(b) Aromatic acid

(c) Schiff's base

(d) Carboxylic acid

176. **What is the hybridization of nitrogen atom of amino group?**

(a) sp

(b) sp^2

(c) sp^3

(d) sp^3d

177. Which of the following can not be represented by the formula C_3H_9N

(a) 1° amine

(b) 2° amine

(c) 3° amine

(d) quartenary ammonium salt

178. Identify the correct IUPAC name

(a) $(CH_3CH_2)_2NCH_3$ = N-Ethyl-N-methylethanamine

(b) $(CH_3)_3CNH_2$ = 2-methylpropan-2-amine

(c) $CH_3NHCH\ (CH_3)_2$ = N-Methylpropan-2-amine

(d) $(CH_3)_2CHNH_2$ = 2, 2-Dimethyl-N-propanamine

179. The most convenient method to prepare primary amine containing one carbon atom less is

(a) Gabriel phthalimide synthesis

(b) Reductive amination of aldehydes

(c) Hofmann bromamide reaction

(d) Reduction of isonitriles

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

(a) Ethylamine

(b) Diethylamine

(c) Triethylamine

(d) Tetrathylammonium iodide

181. Reduction of CH_3CH_2NC with hydrogen in presence of Ni or Pt as catalyst gives

(a) $CH_3CH_2NH_2$

(b) $CH_3CH_2NHCH_3$

(c) $CH_3CH_2NHCH_2CH_3$

(d) $(CH_3)_3N$

182. Which of the following amines will give carbylamine reaction?

(a) $(C_2H_5)_3N$

(b) $(C_2H_5)_2NH$

(c) $C_2H_5NH_2$

(d) $C_3H_7NHC_2H_5$

183. Which of the following is correct

(a)Urea can be prepared by heating ammonium cyanate

(b) Urea can be prepared by reaction of ammonia with phosgene

(c) Urea can be prepared by heating ammonia with carbon dioxide

(d) All

184. Which of the following is correct

(a) Biuret can be prepared by urea

(b) Semi carbazide can be prepared by urea

(c) Ureide can be prepared by urea

(d) All

185. Which of the following is true for estimation of urea?

(a) Urea is estimated by Hypobromide method

(b) Urea is estimated by Hyperbromide method

(c) Urea is estimated by Semicarbazide method

(d) Urea is estimated by biuret method

186. **Which of the following is correct**

(a)Primary amine contains one alkyl group

(b) Secondary amine contains two alkyl group

(c) Tertiary amine contains three alkyl group

(d) All

187. **Which of the following contains positive charge on nitrogen**

(a)Primary amine

(b) Secondary amine

(c) Tertiary amine

(d) Quaternary ammonium salt

188. Primary, secondary and tertiary amines can be distinguished by

(a) Reaction with acid chloride

(b) Reaction with nitrous acid

(c) Carbylamine reaction

(d) All

189. **Which of the following is correct**

(a) 1-Nitropropane gives n-propylamine on reduction with Fe/HCl

(b) 2-Nitrobutane gives 2-aminobutane on reduction with $LiAlH_4$

(c) Nitrobenzene on reduction with Sn/HCl forms Aniline

(d) All

190. **Which of the following is correct**

(a) Nitroalkane on reduction gives amine

(b) Amide on reduction gives amine

(c) Alkyl cyanide on reduction gives amine

(d) All

191. **Which of the following is correct**

(a) Hofmann degradation gives primary amine

(b) Hofmann degradation gives secondary amine

(c) Hofmann degradation gives tertiary amine

(d) Hofmann degradation gives quaternary amine

192. **Which of the following is correct**

(a) Curtius degradation gives primary amine

(b) Curtius degradation gives secondary amine

(c) Curtius degradation gives tertiary amine

(d) Curtius degradation gives quaternary amine

193. **Gabriel synthesis leads to the formation of**

(a) Primary amine

(b) Secondary amine

(c) Tertiary amine

(d) Quaternary amine

194. **Which of the following synthesis is not related to amine**

(a) Hoffmann

(b) Curtius

(c) Gabriel

(d) Kolbe’s reaction

195. **Reduction of N-substituted amides gives**

(a) Primary amine

(b) Secondary amine

(c)Tertiary amine

(d) Quaternary amine

196. **Reduction of N,N-disubstituted amides gives**

(a) Primary amine

(b) Secondary amine

(c) Tertiary amine

(d) Quaternary amine

197. **Which of the following is correct**

(a) Primary amine reacts with benzenesulphonyl chloride

(b) Secondary amine reacts with benzenesulphonyl chloride

(c) Tertiary amine does not react with benzenesulphonyl chloride

(d) All

198. **Which of the following is correct**

(a) Primary amine on acylation gives N-alkylamide

(b) Secondary amine on acylation gives N,N-dialkylamide

(c) Tertiary amine gives no product

(d) All

199. Which of the following is correct for Hinsberg test

(a) It is applied for distinguishing primary amine, secondary amine and tertiary amine

(b) It is applied for distinguishing primary alcohol, secondary alcohol and tertiary alcohol

(c) It is applied for distinguishing primary halide, secondary halide and tertiary halide

(d) None

200. Which of the following is correct

(a) Primary amine reacts with Grignard reagent to give alkane

(b) Secondary amine reacts with Grignard reagent to give alkane

(c) Both a and b are correct

(d) None