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Question Bank

Subject: Chemistry **Year:** Part 1
Course: B.Sc.(Subsidiary)

Instructions:

1. Equal number of questions are to be asked from each of the three groups.
2. All the units in each group are to be covered equitably in the questions.

Group A- Physical

1. Gaseous State:

1. The unit of van der Waals constant '**a**' is
   (a) dm^6 atm mol^{-2}
   (b) dm^3 atm mol^{-2}
   (c) dm^2 atm mol^{-2}
   (d) dm atm mol^{-2}
2. The unit of van der Waals constant '**b**' is
   (a) dm^6 mol^{-2}
   (b) dm^3 mol^{-2}
   (c) dm^3 mol^{-1}
   (d) dm mol^{-2}
3. What is the effect of temperature on the van der Waals constants '**a**' and '**b**'?
   (a) both are independent of temperature
   (b) both depends on temperature
   (c) only '**a**' depends on temperature
   (d) only '**b**' depends on temperature
4. Which of the following gas can be most readily liquified?
   (a) NH_3
   (b) Cl_2
   (c) SO_2
   (d) CO_2
5. A gas will approach ideal behaviour at

(a) low temperature and low pressure
(b) low temperature and high pressure
(c) high temperature and low pressure
(d) high temperature and high pressure

6. Critical volume ‘Vc’ is related with van der Waals constants‘ **a**’and‘ **b**’ **as**
(a) Vc = 3b
(b) Vc = 2b
(c) Vc = 4b
(d) Vc = b

7. Critical volume ‘Pc’ is related with van der Waals constants‘ **a**’and‘ **b**’ **as**
(a) Pc =23b/R
(b) Pc = 27b/R
(c) Pc = $a/27b^2$
(d) Pc = b /Rb

8. Critical volume ‘Tc’ is related with van der Waals constants‘ **a**’and‘ **b**’ **as**
(a) Tc =23b/R
(b) Tc = 8a/27Rb
(c) Tc = $a/27b^2$
(d)Tc = b /Rb

9. For van der Waals gases, the value of critical compressibility factor Zc is
(a) 0.375
(b) 1.375
(c) 0.475
(d) 1.475

10. Which of the following is not true for van der Waals constants‘ **a**’and‘ **b**’
(a) both depends on the nature of gases
(b) both depends on temperature
(c) both are independent of temperature
(d) None

11. van der Waals constants‘ **a**’is related with
(a) force of cohesion existing between gas molecules
(b) excluded volume
(c) radius of gas molecules
(d) All

12. Which of the following is true as we compare ideal gas pressure and van der Waals pressure of gases
(a) always be greater than ideal
(b) always be less than ideal
(c) always be equal to ideal
(d) depends on the nature of the gas

13. van der Waals constants‘ **b**’measures
(a) force of cohesion existing between gas molecules

(b) excluded volume
(c) Total volume of gas molecules
(d) All

14. Which of the followings are dimensionless
    (a) reduced pressure
    (b) reduced temperature
    (c) reduced volume
    (d) All
15. Pc, Vc, and Tc are known as
    (a) critical constants
    (b) Avogadro's constant
    (c) universal constant
    (d) None

16. The volume occupied by one mole of a gas at critical temperature and critical pressure is known as
    (a) molar volume
    (b) critical volume
    (c) reduced volume
    (d) standard molar volume
17. The correct equation for reduced pressure ʿPrʾ is
    (a) Pr =P Pc
    (b) Pr =P /Pc
    (c) Pr =Pc/p
    (d) Pr = 1/Pc
18. The correct equation for reduced pressure ʿPrʾ is
    (a) Vr =V/Vc
    (b) Vr =VVc
    (c) Vr = Vc/V
    (d) Vr = 1/Vc
19. The correct equation for reduced temperature ʿTrʾ is
    (a) Tr =T/ Tc
    (b) Tr =TTc
    (c) Tr = Tc/T
    (d) Tr = 1/Tc
20. If two different gases are each at the same reduced pressure and reduced temperature, they have nearly same reduced volumes. This observation is called
    (a) law of corresponding states
    (b)Third law of thermodynamics
    (c) Boyles law
    (d) Avogadro`s law
21. Which of the followings is a dimensionless quantity

(a) reduced pressure
(b) criticalpressure
(c) critical volume
(d) All

22. Which of the followings is a dimensionless quantity
(a) reduced temperature
(b) critical temperature
(c) Boyle temperature
(d) All

23. Which of the followings is a dimensionless quantity
(a) reduced volume
(b) critical volume
(c) Boyle temperature
(d) All

24. The actual volume of a gas molecule is negligible in comparison to the ……. volume of the gas.
(a) Total
(b) Half
(c) reduced
(d) internal

25. If the value of van der Waals constants' **a**' is greater. It means
(a) the gas liquified easily
(b) the gas cannot be liquified easily
(c) the gas is not liquified
(d) there is no relation between liquification of gas and van der Waals constants' **a**'

2. Solid state:

26. Three dimensional arrangements of points in space is known as
(a) Unit cell
(b) Motif
(c) Crystal lattice
(d) Net

27. How many parameters are required to define a unit cell
(a) 4
(b) 3
(c) 5
(d) 6

28. Law of Rational indices is used in
(a) Crystallography
(b) Thermodynamics

(c) chemical Kinetics
(d) Electrochemistry

29. Miller indices are used to
    (a) describe a given plane in a crystal
    (b) motion of gas molecules
    (c) motion atoms in solids
    (d) All
30. Which of the following is not a crystalline solid
    (a) Glass
    (b) Sodium Chloride
    (c) Potassium Chloride
    (d) Calcium Chloride
31. Which of the following is a covalent or network solid
    (a) Sodium Chloride
    (b) Barium Chloride
    (c) Lithium Chloride
    (d) Diamond

32. Which of the following is not an ionic solid
    (a) Iodine (solid)
    (b) Sodium Chloride
    (c) Lithium Chloride
    (d) Zinc sulphide
33. Which of the following is a molecular solid
    (a) Solid Iodine
    (b) Sodium Chloride
    (c) Calcium fluoride
    (d) Ar(s)
34. Which of the following is a metallic solid?
    (a)HCl
    (b)Cu
    (c) NaCl
    (d) I_2
35. Total number of crystal system is
    (a) 8
    (b) 6
    (c) 7
    (d) 5
36. In rutile structure the coordination number of cations
    (a) 8
    (b) 6
    (c) 7
    (d) 5

37. In rutile structure the coordination number of anions
    (a) 8
    (b) 6
    (c) 7
    (d) 3
38. Which of the following ionic crystals has rutile structure?
    (a)TiO_2
    (b)CaF_2
    (c) K_2O
    (d) NaCl
39. Which of the following ionic crystals has fluorite structure?
    (a) TiO_2
    (b) CaF_2
    (c) K_2O
    (d) NaCl

40. In fluorite structure the coordination number of cations
    (a) 4
    (b) 6
    (c) 7
    (d) 8
41. In fluorite structure the coordination number of anions
    (a) 4
    (b) 6
    (c) 7
    (d) 8
42. In fluorite structure the cations occupy
    (a) all the cubic holes of a primitive cubic array of anions
    (b) half the cubic holes of a primitive cubic array of anions
    (c) one – fourth the cubic holes of a primitive cubic array of anions
    (d) one – third the cubic holes of a primitive cubic array of anions
43. Which of the following is the coordination number of cations and anions in fluorite structure?
    (a) 4:8
    (b) 4:6
    (c) 8:4
    (d) 8:6
44. Which of the following is the coordination number of cations and anions in rutile structure?
    (a) 4:8
    (b) 4:6
    (c) 8:4
    (d) 6:3

45. Graphite has layered structure; the number of carbon atoms bonded to a carbon atom in the same layer is
    (a) 4
    (b) 2
    (c) 3
    (d) 8
46. Graphite is a good conductor of electricity because
    (a) It has free electrons in between layered structure
    (b) It has free protons in between layered structure
    (c) It has free neutrons in between layered structure
    (d) It has free photons in between layered structure
47. Graphite is a soft solid because
    (a) Each carbon atom is bonded with four carbon atoms
    (b) Each carbon atom is bonded with two carbon atoms
    (c) It has free electrons in between layered structure
    (d) It has layered structure
48. Which of the following solid is used as a lubricant?
    (a) Silica
    (b) Graphite
    (c) Sodium chloride
    (d) Calcium fluoride
49. Distance between two adjacent layers in graphite is
    (a) 309pm
    (b) 240pm
    (c) 340pm
    (d) 440pm
50. The bond length between two carbon atoms in the same layer of graphite is
    (a) 170.5pm
    (b) 141.5pm
    (c) 160.5pm
    (d) 205.5pm

3. Conductivity and E.M.F.

51. Conductance (G) is defined as
    (a) directly proportional to resistance
    (b) inversely proportional to resistance
    (c) reciprocal to resistance
    (d) reciprocal of cell constant
52. The unit of Conductance(G) is
    (a) Bar

(b) Ohm
(c) Ampere
(d) Siemen

53. The unit of Specific Conductance(κ) is
(a) Sm^{-1}
(b) Sm^{-2}
(c) Sm^{-3}
(d) Sm

54. Which of the following is not a strong electrolyte?
(a) NaCl
(b) KNO_3
(c) NH_4OH
(d) $FeSO_4$

55. The conductance of electricity in an electrolytic solution is due to
(a) Movement of free electrons in the solution
(b) Movement of ions of electrolyte in the solution
(c) Movement of free atoms in the solution
(d) Movement of solvent molecules in the solution

56. The conducting power of all the ions produced by one gram equivalent of an electrolyte in a given solution is known
(a) electronic conductance
(b) specific conductance
(c) molar conductance
(d) equivalent conductance

57. The unit of Equivalent Conductance(Λ) is
(a) Ω cm
(b) Ω cm^{-3}
(c) Ω cm^{-2}
(d) Ω cm^{-1}

58. The conducting power of all the ions produced by one mole of an electrolyte in a given solution is known as
(a) electronic conductance
(b) specific conductance
(c) molar conductance
(d) equivalent conductance

59. The unit of Molar Conductance(Λm) is
(a) S m^2 mol^{-1}
(b) S m^2 mol^{-2}
(c) S $mmol^{-1}$
(d) S m^3mol^{-1}

60. A cell constant is defined as
(a) the ratio of distance between electrodes and cross-sectional area of electrodes

(b) the multiple of distance between electrodes and cross-sectional area of electrodes
(c) the ratio of distance between electrodes and area of an electrode
(d) the ratio ofcross-sectional area of electrodes distance between electrodes

61. The unit of cell constant is
(a) m^{-1}
(b) m^{-2}
(c) m
(d) m^3

62. The cell constant of conductivity cell
(a) remains constant for a cell
(b) changes with change of electrolyte
(c) depends on temperature
(d) depends on the pressure

63. .The molar conductance of an electrolyte
(a) remains constant on dilution
(b) first increase and then decrease on dilution
(c) increases on dilution
(d) decreases on dilution

64. The specific conductance of an electrolyte
(a) remains constant on dilution
(b) first increase and then decrease on dilution
(c) increases on dilution
(d) decreases on dilution

65. Equivalent conductance of a weak electrolyte increases on dilution because of
(a) increase in degree of dissociation
(b) increase in the number of ions per unit volume
(c) decrease in the number of ions per unit volume
(d) decrease in the degree of dissociation

66. EMF is abbreviation of
(a) electron motion force
(b) electronic motive force
(c) electromotive force
(d) none

67. Emf is a
(a) force
(b) motion
(c) potential difference
(d) none

68. The electrode potential of standard hydrogen electrode is
(a) infinite
(b) always negative

(c) one
(d) zero

69. In standard hydrogen electrode platinum black acts as a
(a) catalyst
(b) electrolyte
(c) both a& b
(d) none

70. An amalgam is a
(a) solution of a metal in liquid Hg
(b) solution of a metal in liquid Na
(c) solution of a metal in liquid Mg
(d) solution of a metal in liquid Br

71. . A calomel electrode contains
(a) Mercury
(b) solid mercurous chloride
(c) solution of potassium chloride
(d) all

72. . At anode
(a) Oxidation takes place
(b) reduction takes place
(c) redox reaction takes place
(d) all

73. .At cathode
(a) oxidation takes place
(b) reduction takes place
(c) redox reaction takes place
(d) All

74. The electrode potential measures the
(a) tendency of electrode to gain or lose electrons
(b) the temperature at electrode
(c) the current at electrode
(d) all

75. An electrochemical series is
(a) arrangement of electrode potentials of different types of electrodes
(b) arrangement elements in periodic table
(c) arrangement of metals in periodic table
(d) arrangement of non-metals in periodic table

4. Liquid and Colloidal State:

76. Matter exists in …… physical states

(a) Three
(b) Four
(c) Two
(d) Five

77. Which of the following is true?
(a) Solids have definite volume and definite shape
(b) Liquids have definite volume but do not have definite shape
(c) Gases have neither definite volume nor definite shape
(d) All

78. The unit of surface tension is
(a) N m^{-1}
(b) N m^{-2}
(c) N m^{-3}
(d) N m

79. Which of the following is true?
(a) Surface tension of a liquid decreases with rise in temperature
(b) Surface tension of a liquid increases with rise in temperature
(c) Surface tension of a liquid remains constant with rise in temperature
(d) None

80. The force of friction between two layers of a liquid moving past one another with different velocities is known as
(a) Surface tension
(b) Viscosity
(c) Surface action
(d) Layer movement

81. The viscosity of a liquid depends on the
(a) Temperature
(b) Pressure
(c) Nature of liquid
(d) All

82. Parachor is related with
(a) Liquids
(b) Solids
(c) Gases
(d) All

83. Generally, the size of the colloidal particles is
(a) 10Å - 2000Å
(b) 1Å - 10Å
(c) More than 2000Å
(d) More than 4000Å

84. Which of the followings are true for a colloidal system?
(a) It is a two-phase system
(b) The continuous phase of colloidal system is called dispersion medium

(c) The discontinuous phase of colloidal system is called dispersed phase
(d) All

85. When the dispersion medium is a gas, the colloidal system is called
(a) Sols
(b) Emulsions
(c) Aerosols
(d) None

86. The colloidal system with solids as dispersed phase and liquid as dispersion medium is called
(a) Sols
(b) Emulsions
(c) Aerosols
(d) None

87. The colloidal system in which dispersion medium as well as dispersed phase are liquids is known as
(a) Sols
(b) Emulsions
(c) Aerosols
(d) None

88. Lyophilic colloids
(a) Have strong interactions with the dispersion medium
(b) Are much more stable
(c) Are also known as reversible colloids
(d) All

89. Lyophobic colloids
(a) are less stable
(b) are also called irreversible colloids
(c) have weak interactions with the dispersion medium
(d) All

90. Which of the following is not true?
(a) Surface tension of lyophobic sols is usually the same as that of the dispersion medium
(b) Surface tension of lyophilic sols is generally lower than that of the dispersion medium
(c) Viscosity of lyophobic sols is about the same as that of dispersion medium
(d) Viscosity of lyophilic sols is about the same as that of dispersion medium

91. Tyndall effect is related with
(a) Solutions
(b) Colloidal system

(c) Solids
(d) None

92. Tyndall effect is
(a) Dispersion of light
(b) Scattering of light
(c) Reflection of light
(d) Refraction of light

93. Flocculation refers to
(a) movement of colloidal particles
(b) separating the particles of colloidal solution
(c) neutralization of charge on colloidal particles
(d) purification of colloidal solution

94. The Brownian movement is due to
(a) Temperature fluctuation of colloidal system
(b) The bombardment of colloidal particles by molecules of dispersion medium
(c) Pressure fluctuation of the colloidal system
(d) None

95. Which of the followings are true about Brownian movements?
(a) The Brownian movement is not observed in ordinary suspension
(b) Brownian movement offers visible proof of the random kinetic motion of molecules in a liquid
(c) The bombardment of colloidal particles by molecules of dispersion medium is the cause of Brownian movement
(d) All

96. The ultramicroscope was devised by using
(a) Tyndall effect
(b) Stark effect
(c) Compton effect
(d) Brownian movement

97. Which of the following ions have more efficacy to cause coagulations?
(a) Al^{3+}
(b) Mg^{2+}
(c) Na^{+}
(d) Ba^{2+}

98. When ions are arranged in their increasing order of efficacy for coagulating a lyophobic sol a series is form, that series is known as
(a) Electrochemical series
(b) Hofmeister series

(c) Brownian series
(d) Tyndall Serie

99. The size of colloidal particles is determined by
(a) By using Ultrafilters
(b) From Brownian Movement
(c) From scattering of light
(d) All

100. The largest number of milligrams of a protective colloid which, when added to 10 ml of a special standard gold sol just fails to prevent the colour change from red to blue upon addition of one ml of 10 percent sodium chloride solution is known as
(a) Avogadro`s number
(b) Quantum Number
(c) Gold number
(d) None

Group B- Inorganic

Unit 1- Atomic Structure and Periodicity:

Q101. Which of the following elements is a non-metal?

(a) Aluminum (b) Gold

(c) Carbon (d) Tin

Q102. Which of the following ion is largest ?

(a) Al^{+3} (b) Mg+2

(c) Na^{+} (d) F^{-}

Q103. Which of the following elements has maximum electron affinity ?

(a)S (b) O

(c) Cl (d) F

Q104. Which element shown here is the least metallic?

(a) Zinc (b) Cadmium

(c) Iron (d) Silver

Q105 Which of the following is a noble gas?

(a) Helium (b) Carbon Dioxide

(c) CO (d) SO_2

Q106. Group IIA forms a compound with an element Y from Group VIA. The compound will most likely have the formula:

(a) X_5Y_3 (b) XY

(c) X_3Y_6 (d)X_3Y_2

Q107. The correct acidic strength of following hydra acids

(a) CH_4 (b) NH_3 (c) H_2O (d) H–F

(a) a > b > c> d (b) d > c > b > a

(c) c > d > a > b (d) b > a > c > d

Q108. The correct order of first ionization energy is

(a) C (b) N (c) O (d) F

(a) a > b > c > d (b) d > c > b > a

(c) d > c > a > b (d) d > b > c > a

Q109 Which element shown here has the least first ionization energy?

(a) B (b) Ga

(c) Al (d) In

Q.110 The correct order of covalent nature of following halide is

(a) NaCl > $MgCl_2$ > $AlCl_3$ (b)$CaCl_2$ > $SrCl_2$> $BaCl_2$ > $BeCl_2$

(c) LiF> LiCl > LiBr (d) $BeCl_2$> $CaCl_2$> $SrCl_2$ >$BaCl_2$

Q111 Which one is amphoteric oxide?

(a) CO_2 (b) Al_2O_3

(c) SO_2 (d) SiO_2

Q112. Which one has least dipole moment?

(a) CCl_4 (b) SF_4

(c) SO_2 (d) ClF_3

Q113 Which one of the following is the correct order of the size of ionic species?

(a) $Br > Br^- > Br^+$ (b) $Br > Br+ > Br^-$

(c) $Br^+ > Br^- > Br$ (d) $Br^- > Br > Br+$

Q114 What should be the order of size of A^{-1} , A^{+1} and A ?

(a) $Na^{+1} < F < F^{-1}$ (b)$Na^{+1} < F^{-1} < F$

(c) $F < Na^{+1} < F^{-1}$ (b) $F < F^{-1} < Na^{+1}$

Q115 The van der Waal's radii of O, N, Cl, F and Ne increase in the order

(a) F, O, N, Ne, Cl (b) N, O, F, Ne, Cl

(c) Ne, F, O, N, Cl (d) F, Cl, O, N, Ne

Q116 Calculate the bond length of C–X bond, if C–C bond length is 1.54 Å, X–X bond length is 1.00 Å and electronegativity values of C and X are 2.0 and 3.0 respectively

(a) 1.00 Å (b) 0.77 Å (c) 0.54 Å (d) 1.18 Å

Q117 Which of the following should be the longest bond ?

(a) S–H (b) O–H (c) N–H (d) P–H

Q118 An element with least atomic size amongst carbon, nitrogen, boron and beryllium .

(a) carbon, (b) oxygen

(c) nitrogen (d) boron

Q119 In hydrogen atom , if energy of an electron in ground state is -13.6eV. What will be its energy in second excited state?

(a) -13.6eV (b) -3.4eV

(c) -1.51ev (b)-122.8eV

Q120. An alpha-particle is accelerated through a potential difference of V volt.The de-Broglie's wavelength associated with it can be given by

(a) $\frac{0.101}{\sqrt{V}}\,\mathring{A}$ (b) $\frac{0.268}{\sqrt{V}}\,\mathring{A}$

(c) $\frac{0.605}{\sqrt{V}}\,\mathring{A}$ (b) $\sqrt{\frac{150}{V}}\,\mathring{A}$

Q121. When electron falls from n=3 to n=2 then emitted energy is ?

(a) 122.8eV (b) 1.9eV

(c) 3.4eV (d) 10.2eV

Q122. The uncertainty in position of a O.25 gm particle is 10^{-5}m. Uncertainty of velocity is [h=6.6x 10^{-34}J.s]?

(a) 1.2x 10^{-27} (b) 2.1 x 10^{-26}

(c) 2.6 x 10^{-34} (d) 1.7 x 10^{-30}

Q.123 The ratio between kinetic energy and total energy of an electron in hydrogen atom in its first Bohr' radius is

(a) 1:1 `(b)1:2 (c) 1:-1 (d) 2:1

Q124 If uncertainty in position and momentum are equal the uncertainty in velocity is given by

(a) $\frac{1}{2m}\sqrt{\frac{h}{\pi}}$ (b) $\frac{1}{2}\sqrt{\frac{h}{\pi}}$ (c) $\sqrt{\frac{h}{2\pi}}$ (d) Zero

Q125 What is the orbital degeneracy of the level that has energy= $\frac{-hcR_H}{9}$ in Hydrogen atom.Where R_H is Rydberg's Constant for the hydrogen atom

(a) 4 (b) 8 (c) 9 (d) 3

Unit 2: Structure and Shape of Molecules:

Q.126 Which of the following has a structure different from the other three species (having the same structure)?

(a)BF_4^- (b) SO_4^{-2} (c) XeF_4 (d) PH_4^+

Q.127 Maximum bond energy is in :

(a) F_2 (b) N_2 (c) O_2 (d) I_2

Q.128 Among the following species, identify the isostructural pairs :

(a) [NF_3, NO_3^-] and [BF_3, H_3O^+] (b) [NF_3, OF_2] and [NO_3^- ,BF_3]

(c) [NF_3, H_3O^+] and [NO_3^- ;BF_3,] (d) [NF_3, H_3O^+] and [OF_2,BF_3]

Q.129 Number and type of bonds between two carbon atoms in calcium carbide CaC_2 are :

(a) one sigma (σ) and one pie (π) bond (b) one σ and two π bonds

(c) one σ and one and a half π bond (d) one σ bond

Q.130 Hybridisation of carbon in chloroethene is

(a) sp^2 both (b) sp^3 both (c) sp^2 , sp^3 (d) sp, sp^2

Q.131 Maximum bond energy is in :

(a) F_2 (b) Cl_2 (c) Br_2 (d) I_2

Q.132 The hybridisation and shape of B**rF_3** molecule are :

(a) sp^3d and *T* shape (b) sp^3d^2 and tetragonal

(c) sp^3d and bent (d) sp^3d and trigonal pyramidal

Q.133 The shape of methyl cation **(CH_3^+)** is likely to be:

(a) linear (b) pyramidal (c) planar (d) spherical

Q.134 The structure of XeF_2 involves hybridization of the type :

(a) sp^3 (b) dsp^2 (c) sp^3d (d) sp^3d^2

Q.135 In the XeF_4 molecule, the Xe atom is in the

(a) sp^2-hybridized state (b) sp^3-hybridised state

(c) sp^3d^3-hybridized state (d) sp^3d^2-hybridized state

Q.136 How many (σ) and pi (π) bonds are there in salicylic acid?

(a) 10σ, 4π (b) 16σ, 4π (c) 18σ, 2π (d) 16σ, 2π

Q.137 In the compound $\overset{1}{C}H_2=\overset{2}{C}H-\overset{3}{C}H_2-C\equiv CH$, the C_2-C_3 bond is of the overlapping type :

(a) sp - sp^2 (b) sp^3-sp^3 (c) sp - sp^3 (d) sp^2 - sp^3

Q.138 In the context of carbon, which of the following is arranged in the correct order of electronegativity :

(a) sp > sp^2 > sp^3 (b) sp^3 > sp^2 > sp (c) sp^2 > sp> sp^3 (d) sp^3 > sp > sp^2

Q.139 When 2s-2s, 2s-2p and 2p-2p orbitals overlap, the bond strength decreases in the order :

(a) 2s-2s>2s-2p > 2p-2p (b) 2p-2p>2s-2p > 2s-2s

(c) 2s-2s> 2p-2p >2s-2p (d) 2p-2p>2s-2p >2s-2s

Q.140 The experimental value of the dipole moment of *HCl* is 1.03 *D*. The length of the bond is 1.275Å . The percentage of ionic character in *HCl* is:

(a) 43 (b) 21 (c) 17 (d) 7

Q.141 Carbon atoms in $C_2(CN)_4$ are :

(a) *sp*-hybridized (b) sp^2-hybridized

(c) *sp*- and sp^2 hybridized (d) *sp*, sp^2 and sp^3- hybridized

Q.142 CO_2 is isostructural with

(I) $BeCl_2$ (II) H_2O (III) NH_3 (IV) BeH_2

(a) I and III (b) II and IV (c) I and IV (d) III and IV

Q.143 The ratio of (σ) and pi (π) bonds in benzene is :

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

Q.144 The shape of a molecule which has 3 bond pairs and one lone pair is :

(a) Octahedral (b) Pyramidal (c) Triangular planar (d) Tetrahedral

Q.145 Which molecule is *T* shaped :

(a)BeF_2 (b) BCl_3 (c) NH_3 (d) ClF_3

Q.146 A σ -bond is formed by two p_x orbitals each containing one unpaired electron when they approach each other along :

(a) *x* - axis (b) *y* - axis (c) *z* - axis (d) any direction

Q.147 The dipole moment of is 1.5 *D*. The dipole moment of is :

(a) 0 *D* (b) 1.5 *D* (c) 2.86 *D* (d) 2.25 *D*

Q.148 The structure of XeF_6 in vapour phase is

(a) pentagonal bipyramidal (b) trigonal bipyramidal

(c) capped octahedron (d) square bipyramidal

Q.149 Cyanogen, $(CN)_2$, has a ____ shape/structure :

(a) Linear (b) Zig-zag (c) V-shape (d) Cyclic

Q150 Which of the following has the least dipole moment

(a) NF_3 (b) CO_2 (c) SO_2 (d) NH_3

Unit 3: Study of s-Block Elements

151. The metals, soft to be cut with knife, belongs to-

(a) s-block elements

(b) p-block elements

(c) d-block elements

(d) f-block elements

152. The metal ions involved in sodium and potassium pump in human body belongs to

(a) d-block

(b) s-block

(c) p-block

(d) f-block

153. Which of the following is a radioactive element of the first group of s- block ?

(a) Cs

(b) Li

(c) Fr

(d) Ra

154. The most electropositive metal among the alkaline earth metals is-

(a) Be

(b) Mg

(c) Ca

(d) Ba

155. Hydroxide of which alkaline earth metal is used in “Milk of magnesia’?

(a) Be

(b) Mg

(c) Ca

(d) Ba

156. In s- block elements, the outer electronic configuration is-

(a) $ns^{(1-2)}$

(b) $ns^2np^{(1-6)}$

(c) $(n-1)d^{(1-10)}ns^{(0-2)}$

(d) None of these

157. On heating, which of the following releases CO_2 most easily?

(a) $MgCO_3$

(b) K_2CO_3

(c) $CaCO_3$

(d) Na_2CO_3

158. Solubility of the alkaline earth metal sulphates in water decreases in sequence-

(a) Ba>Mg>Sr>Ca

(b) Sr>Ca>Mg>Ba

(c) Ca>Sr>Ba>Mg

(d) Mg>Ca>Sr>Ba

159. Atomic weight of hydrogen is -

(a) 1.008

(b) 1.06

(c) 1.020

(d) 1.00

160. Electronic configuration of potassium is-

(a) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^1$

(b) $[Ar]4s^1$

(c)$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4d^1$

(d) Both (a) & (b)

161. Which one of the following has largest atomic radius?

(a) Li

(b) Na

(c) K

(d) Can't be predicted

162. Alkali metals are the members of-

(a) First group of s-block
(b) Second group of s-block
(c) First and Second groups of s-block
(d) Any other

163. Which atom/ion of alkaline earth metal is present in Chlorophyll?

(a) Sr

(b) Ba

(c) Ca^{+2}

(d) Mg^{+2}

164. Correct order of hydration enthalpy of alkali metal ions is-

(a) $Li^+ > Na^+ > K^+ > Rb^+ > Cs^+$

(b) $Rb^+ > Cs^+ > Li^+ > Na^+ > K^+$

(c) $Cs^+ > Rb^+ > K^+ > Na^+ > Li^+$

(d) None of the above

165. Which of the s-block element is used in Lassaigne's Test for element detection in organic compounds?

(a) Na

(b) K

(c) Ca

(d) Mg

166. Which of the following is known as the fusion mixture?

(a) Mixture of $Na_2CO_3 + NaHCO_3$

(b) $Na_2CO_3 .10\ H_2O$

(c) Mixture of $K_2CO_3 + Na_2CO_3$

(d) $NaHCO_3$

167. Hydration enthalpy of alkali metals-

(a) increases with increase in ionic radii.

(b) decreases with increase in ionic radii.

(c) no effect of increase in ionic radii.

(d) None of the above.

168. Which of the following metal ions plays important role in muscles contraction?

(a) K^+

(b) Na^+

(c) Ca^{+2}

(d) Mg^{+2}

169. The reactivity of alkali metals with oxygen-

(a) increases down the group.
(b) decreases down the group.
(c) non-reactive.
(d) none of the above.

170. s-Block elements, in their outermost orbital/s can accommodate only-

(a) 2 electrons

(b) 3 electrons

(c) 4 electrons

(d) 1 electron

171. In periodic table, where s- block elements are present?

(a) In middle

(b) Right side

(c) Left side

(d) At bottom

172. Which one of the alkali metals forms only the normal oxide M_2O on heating in air?

(a) Na

(b) Rb

(c) Li

(d) K

173. Which one of the following elements are in s- block?

(a) Sr

(b) Ar

(c) Kr

(d) Sc

174. Atomic number of Cs is-

(a) 54

(b) 55

(c) 53

(d) 37

175. Among the following oxides, which is most basic ?

(a) MgO

(b) Al_2O_3

(c) ZnO

(d) N_2O_5

Unit 3: Study of p-Block Elements:

Q.176 The shapes of BrF_5 and IF_7 are respectively:

(a) distorted square pyramidal and pentagonal bipyramidal

(b) octahedral and pyramidal

(c) square pyramidal and pentagonal bipyramidal

(d) square planar and octahedral

Q. 177 Which of the following pairs is isostructural?

(a) SF_4 and SiF_4 (b) SF_6 and SiF_6^{-2}

(c) SiF_6^{-2} and XeF_6 (d) BF_3 and ClF_3

Q.178 The correct order of decreasing X-O-X [where X=F,H or Cl] bond angle is :

(a) $H_2O > Cl_2O > F_2O$ (b) $Cl_2O > H_2O > F_2O$

(c) $F_2O > Cl_2O > H_2O$ (d) $F_2O > H_2O > Cl_2O$

Q.179 H-B-H bond angle in BH_4^- is :

(a) 180º (b) 120º (c) 109º28' (d) 90º

Q.180 There is change in the hybridisation when:

(a) NH_3 combines with H^+ (b) H_2O combines with H^+

(c) NH_3 forms NH_2^- (d) SiF_4 forms SiF_6^{-2}

Q.181 Which of the following is **incorrect** about bond angle

(a) $NO_2^+ > NO_2 > NO_2^-$

(b) $CH_4 > NH_3 > H_2O$

(c) $OCl_2 > H_2O > OF_2$

(d) $PCl_3 > PBr_3 > PI_3$

Q.182 Name the structure of silicate in which three oxygen atoms of $[SiO_4]^{-4}$ are shared

(a) orthosilicate (b) pyrosilicate

(c) chain silicate (d) sheet silicate

Q.183 When boric acid is heated at 150ºC, which is product is obtained

(a) HBO_2 (b) B_2O_3

(c) $H_2B_4O_7$ (d) B

Q.184 Which one is the strongest lewis acid?

(a) BF_3 (b)BCl_3

(c) BBr_3 (d) BI_3

Q.185 Which of the following anion is present in chain silicate structure

(a) $[SiO_4]^{-4}$ (b) $[Si_2O_7]^{-6}$

(c) $[Si_2O_5^{-2}]_n$ (d) $[SiO_3^{-2}]_n$

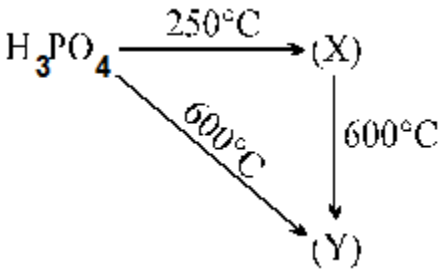
Q186 First compound of inert gases was prepared by scientist Neil Barthlete in 1962. This compound is

(a) $XePtF_6$ (b) XeO_3 (c) XeF_6 (d) $XeOF_4$

Q187 Which of the following species is not a pseudohalide?

(a) CNO^- (b) $RCOO^-$ (c) OCN^- (d) N_3^-

Q.188 For the reaction which one of following is correct.



(a) (X) = Pyrophosphoric acid (liquid), (Y) = Metaphosphoric acid (liquid)

(b) (X) = Pyrophosphoric acid (liquid), (Y) = Metaphosphoric acid (solid)

(c) (X) = Pyrophosphoric acid (solid), (Y) = Metaphosphoric acid (solid)

(d) (X) = Pyrophosphoric acid (solid), (Y) = Metaphosphoric acid (liquid)

Q189. Conc. H_2SO_4 cannot be used to prepare HBr from NaBr because it

(a) reacts slowly with NaBr (b) oxidises HBr

(c) reduces HBr (d) disproportionates HBr

Q190. Which one is a interhalogen compound?

(a) NaBr (b) HOBr

(c) HBr (d) ClF_3

Q191. Which one does not exist ?

(a) $BrCl_2$ (b) IF_7

(c) BrF_5 (d) ClF_3

Q192. The formula of a metal chloride is MCl_3. What would be the formula of its Phosphate?

(a) $M(PO_4)_2$ (b) M_3PO_4

(c) MPO_4 (d) M_2PO_4

Q193. HI can not be prepared by the action of conc. H_2SO_4 on KI because

(a) HI is stronger acid than H_2SO_4

(b) H_2SO_4 is strong oxidising agent to oxidise HI

(c) HI is strong oxidising agent

(d) HI is more acidic than H_2SO_4

Q194. The correct increasing order of Pka value of oxy acids?

(a) $HClO_4 < HNO_3 < H_2CO_3 < H_3BO_3$ (b) $HClO_4 < H_2CO_3 < H_3BO_3 < HNO_3$

(c) $HNO_3 < HClO_4 < H_2CO_3 < H_3BO_3$ (d) $H_2CO_3 < HClO_4 < H_3BO_3 < HNO_3$

Q195 . When BCl_3 is treated with water , which would be correct product ?

(a) H_3BO_3 + HCl (b) B_2H_6 + HCl

(c) B_2O_3 + HCl (d) HBO_2 + HCl

Q196 . XeF_6 on complete hydrolysis gives ?

(a) $XeOF_2$ (b) XeF_2 (c) XeO_3 (d) $XeOF_4$

Q197 . The number of lone pairs on Xe in XeF_2 , XeF_4 , XeF_6 respectively ?

(a) 3,2,1 (b)1, 3, 2 (c) 4,1,2 (d)1,2,3

Q198. The correct statement about $B_3N_3H_6$ is

(a) it is also called inorganic graphite

(b) it is aromatic in nature

(c) it is obtained by heating B_2H_6 with NH_3 at high temperature

(d) it has d_π-p_π bond between B and N atoms

Q199 Which one is not an example of pseudohalide ion?

(a) CN^- (b) Cl^- (c) CNS^- (d)CNO^-

Q200 Which one is example of Alum?

(a) $KCl.MgCl_2.6H_2O$ (b) $K_2SO_4.Al_2(SO_4)_3.24H_2O$

(c) $MgSO_4.Al_2(SO_4)_3.24H_2O$ (d)$FeSO_4.(NH_4)_2SO_4.6H_2O$

Group C- Organic

Q.201 The compounds $C_2H_5OC_2H_5$ and $CH_3OCH_2CH_2CH_3$ are

(a) chain isomers (b) geometrical isomers

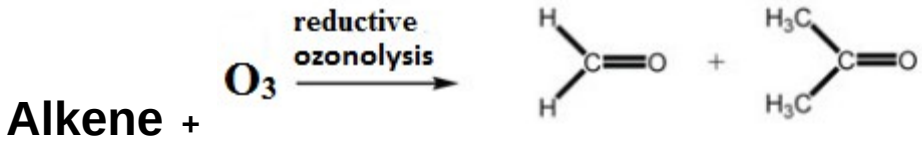
(c) metamers (d) conformational isomers

Q.202 Which one is an example of electrophile?

(a) NH_3 (b) SO_3

(c) NH_4^+ (d) H_3O^+

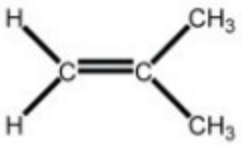
Q. 203 Reductive ozonolysis of an alkene gives following product , predict alkene .

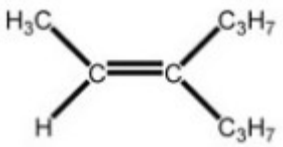


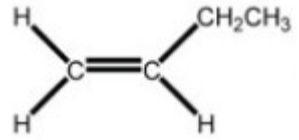
(a) propene (b) 2-butene

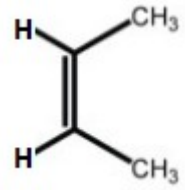
(c) 1- pentene (d) isobutylene

Q. 204 Which alkene exhibits geometrical isomerism?

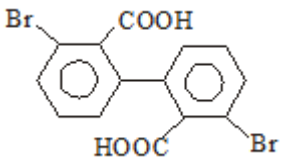
(a) 

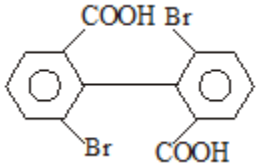
(b) 

(c) 

(d) 

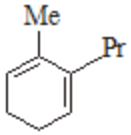
Q. 205 Both structures are which type of isomers

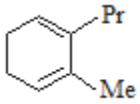




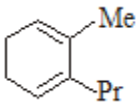
(a) Positional (b) Chain (c) Geometrical (d) Functional

Q. 206 Which of the following has **incorrect** relation?

(a) 

&


identical

(b) 

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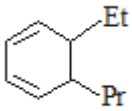
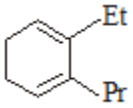


positional isomers

(c) 

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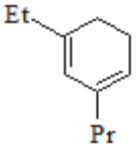
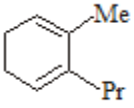


positional isomers

(d) 

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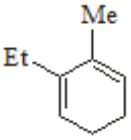
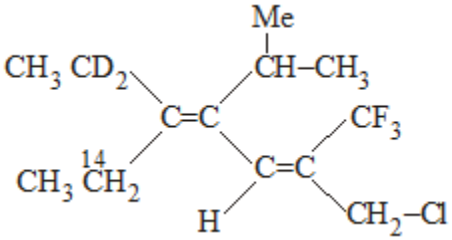


homologues

Q. 207



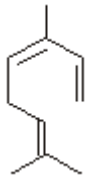
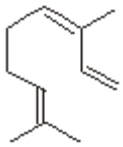
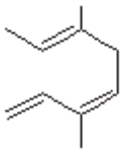
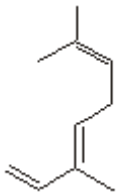
Configuration of both the double bond in this compound respectively are

(a) 2E 4E (b) 2E 4Z (c) 2Z 4E (d) 2Z 4Z

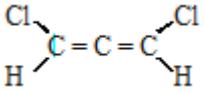
Q. 208 The highest priority of group using CIP sequence rules is

(a) –CN (b) –OH,
(c) –D (d) –H,

Q. 209 The terpene ocimene has the IUPAC name (3E)-3,7-dimethyl-1,3,6-octatriene, what is the structural formula of this compound?

(a)  (b)  (c)  (d) 

Q.210 Which compound(s) will show the geometrical isomerism?

(a) ethene (b) 
(c) propene (d)1,2-dichloethene

Q.211 Arrange the groups or atoms accroding to their priority order using CIP sequence rules ?

–COOH, –COCl, $–CONH_2$,–CHO,

(a) –COOH, > –COCl, > $–CONH_2$,> –CHO, (b) –COOH, >$–CONH_2$,>–COCl, >–CHO,

(c) –COCl, > –COOH, > $–CONH_2$,>–CHO, (d) –CHO, >–COOH,> –COCl, >$–CONH_2$,

Q.212 Which one is an example of Grignard reagent?

(a)CH_3-CH_2MgBr (b) CH_3-CH_2-ONa (c) (CH_3)$_2$CuLi (d) NOCl

Q.213 Ethyl formate and methyl acetate shows which type of isomerism

(a) Functional group isomerism (b) Geometrical isomerism
(c) Metamerism (d) Position isomerism

Q.214 Silver salt method is used to determine molecular weight of

(a) CH_3-CH_3 (b) CH_3-CH_2-OH (c) CH_3-CH_2-NH_2 (d) CH_3-CH_2-COOH

Q.215 How many minimum no. of C-atoms are required for position & geometrical isomerism respectively in alkene?

(a) 4, 3 (b) 4, 4 (c) 3, 4 (d) 3, 3

Q.216 Which of the following can show optical isomerism?

(a) $CH_3–CH(OH)–CH_2–CH_3$ (b) $CH_3–CHO$

(c) $CH_2=CH–CH_2$-Cl (d) $CH_3CH_2–OH$

Q.217 Which one is an example of nucleophile?

(a) NH_3 (b) SO_3

(c) $AlCl_3$ (d) BH_3

Q.218 Which of the following does not show geometrical isomerism?

(a) 1, 2-dichloro-1-pentene (b) 1, 3-dichloro-2-pentene

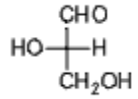
(c) 1, 1-dichloro-1-pentene (d) 1, 4-dichloro-2-pentene

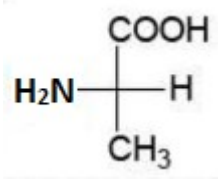
Q.219 What characteristic is the best common to both cis-2-butene and trans-2-butene?

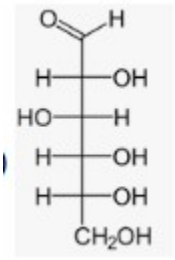
(a) Boiling point (b) Dipole moment

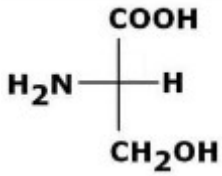
(c) heat of hydrogenation (d) Product of hydrogenation

Q.220 Which one is example of D-configuration?

(a) 

(b) 

(c) 

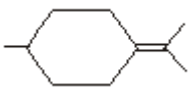
(d) 

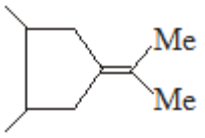
Q.221 Which of the following has zero dipole moment?

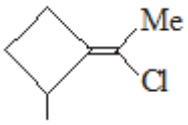
(a) benzene 1,4- diol (b) trans-1,2-dichloro ethene

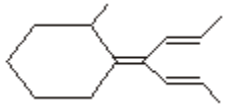
(c) cis-1,2-dichloro ethene (d) 1,1-dichloro ethene

Q.222 Which of the following will not show geometrical isomerism.

(a) 

(b) 

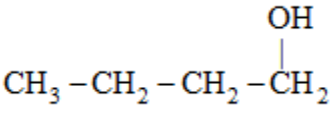
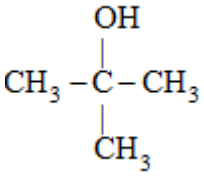
(c) 

(d) 

Q.223 Geometrical isomerism is possible in:

(a) isobutene (b) 2-butene

(c)ethyne (d) 1-butene

Q.224  and  are

(a) chain isomers (b) positional isomers

(c) Geometrical isomers (d) optical isomers

Q.225 Ozonolysis of $CH_3–CH=C=CH_2$ will give

(a) Only CH_3CHO (b) Only HCHO

(c) Only CO_2 (d) Mixture of CH_3CHO, HCHO & CO_2

Q.226 Anti–Markownikoff's addition of HBr is not observed in –

(a) Propene (b) But–2–ene

(c) But-1-ene (d) Pent–1–ene

Q.227 Acetylene may be prepared using Kolbe's electrolytic method employing –

(a) Pot. acetate (b) Pot. succinate (c) Pot. fumarate (d) Pot. Malonate

Q.228 A mixture of CH_4, C_2H_4 and C_2H_2 gaseous are passed through a Wolf bottle containing ammonical cuprous chloride. The gas coming out is

(a) Methane (b) Acetylene

(c) Mixture of methane and ethylene (d) original mixture

Q229 Ethylene forms ethylene chlorohydrin by the action of –

(a) Dry HCl gas (b) Dry chlorine gas

(c) Solution of chlorine gas in water (d) Dilute hydrochloric acid

Q230 An alkene on ozonolysis yields only ethanal. There is an isomer of this which on ozonolysis yields:

(a) propanone & methanal (b) ethanal & methanal

(c) methanal only (d) only propanal

Q231 Which of the following will give same product with HBr in presence or absence of peroxide.

(a) Cyclohexene (b) 1-methylcyclohexene

(c) 1,2-dimethylcyclohexene (d) 1-butene

Q232 Which is not correct reaction product ?

(a) $Al_4C_3 + H_2O \rightarrow CH_4$ (b) $CaC_2 + H_2O \rightarrow C_2H_2$

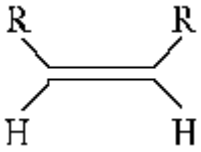
(c) $Mg_2C_3 + H_2O \rightarrow CH_3C \equiv CH$ (d) $Be_2C + H_2O \rightarrow HC \equiv CH$

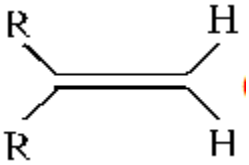
Q233 Propyne and propene can be distinguished by –

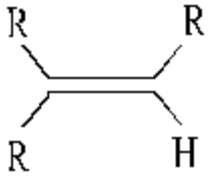
(a) HCl (b) Br_2 in CCl_4

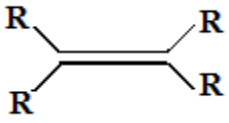
(c) dil. $KMnO_4$ (d)ammonical $AgNO_3$

Q234 Which one of the following alkenes will react fastest with H_2 under catalytic hydrogenation condition –

(a) 

(b) 

(c) 

(d) 

Q.235 Which of the following compounds does not show geometrical isomerism?

(a) 2–butene (b) Propene (c) 1–phenylpropene (d) 3–methyl–2–pentene

Q236 Of the following, unsaturated hydrocarbons is –

(a) ethyne (b) cyclohexane (c) n–propane (d) ethane

Q.237 1-chlorobutane on reaction with alcoholic potash gives –

(a) 1–butene (b) 1–butanol (c) 2–butene (d) 2–butanol

Q238 When Phenyl Magnesium Bromide reacts with tert. butanol, which of the following is formed?

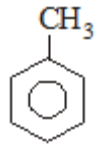
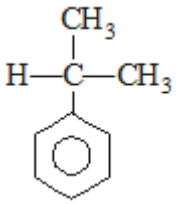
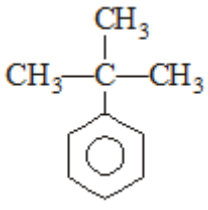
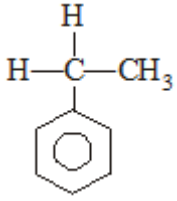
(a) Tert. butyl methyl ether (b) Benzene

(c) Tert. butyl benzene (d) Phenol

Q239 2–hexyne can be converted into trans–2–hexene by the action of :

(a) H_2–Pd-$BaSO_4$ (b) Li in liq. NH_3 (c) H_2–PtO_2 (d) $NaBH_4$

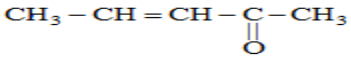
Q.240 Arrange following compounds in decreasing order of electrophilic substitution.

(i)  (ii)  (iii)  (iv) 

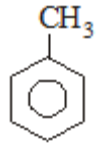
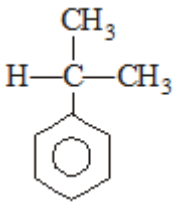
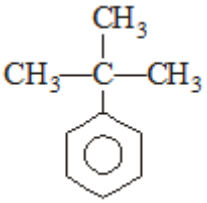
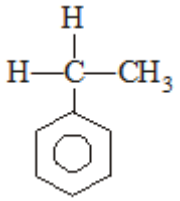
(a) i > ii > iii > iv (b) iii > iv > ii > i (c) i > iv > ii > iii (d) i > ii > iv > iii

Q.241 Which one of the following molecules has all the electronic effect, namely inductive, mesomeric and hyperconjugative?

(a) CH_3Cl (b) $CH_3–CH = CH_2$

(c)  (d) $CH_2 = CH – CH = CH_2$

Q.242 Arrange following compounds in increasing order of electron density in benzene ring.

(i)  (ii)  (iii)  (iv) 

(a) i > ii > iii > iv (b) iii > iv > ii > i (c) i > iv > ii > iii (d) i > ii > iv > iii

Q.243 In C-C bond in C_2H_6 undergoes heterolytic fission, the hybridisation of carbon in the resulting two species is / are

(a) sp^2 both (b) sp^3 both (c) sp^2, sp^3 (d) sp, sp^2

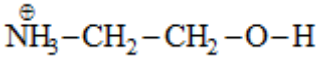
Q244 Which of the following has been arranged in order of decreasing dipole moment ?

(a)$CH_3Cl > CH_3F > CH_3Br > CH_3I$ (b) $CH_3F > CH_3Cl > CH_3Br > CH_3I$

(c) $CH_3Cl > CH_3Br > CH_3I$ >CH_3F(d) $CH_3F > CH_3Cl > CH_3I > CH_3Br$

Q245 Which of the following is correct order of decreasing acidic strength ?

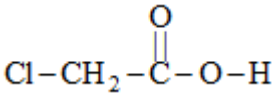
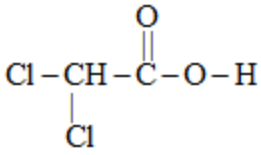
(I) $F–CH_2–CH_2–O–H$ (II) $NO_2–CH_2–CH_2–O–H$

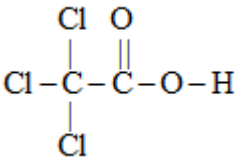
(III) $Br–CH_2–CH_2–O–H$ (IV) 

(a) I>II>III>IV (b) IV>III>II>I

(c) IV>II>I>III (d) II>IV>III>I

Q246 Which of the following is correct order of decreasing acidic strength ?

(I)  (II) 

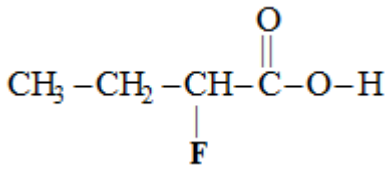


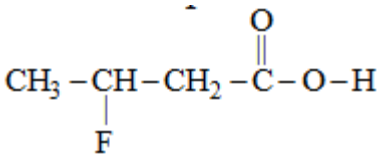
(III)

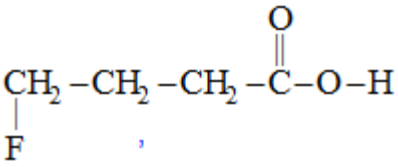
(a) I>II>III (b) III>II>I

(c) II>I>III (d) II>III>I

Q247 Which of the following is correct order of decreasing acidic strength ?

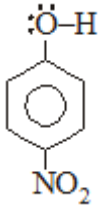
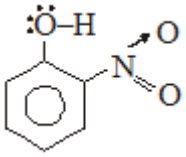
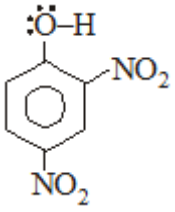
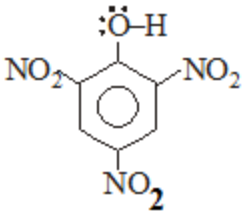
(I) 

(II) 

(III) 

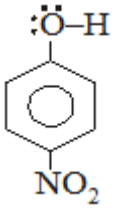
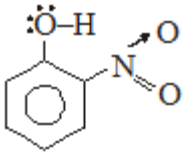
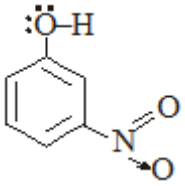
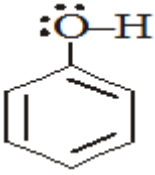
(a) I>II>III
(b) III>II>I
(c) II>I>III
(d) II>III>I

Q248 Which of the following is correct order of decreasing acidic strength ?

(I)  (II)  (III)  (IV) 

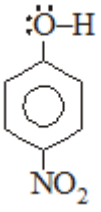
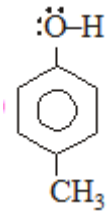
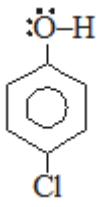
(a)IV > I>II>III
(b) IV>III>II>I
(c) IV>III>I>II
(d) II>III>I>IV

Q249 Which of the following is correct order of decreasing acidic strength ?

(I)  (II)  (III)  (IV) 

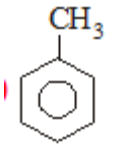
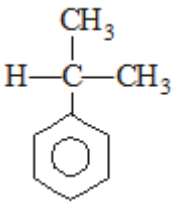
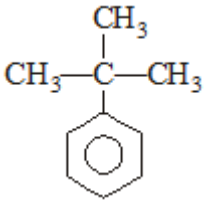
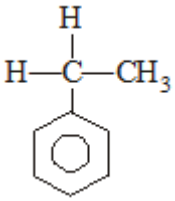
(a) I>II>III>IV
(b) IV>III>II>I
(c) IV>III>I>II
(d) II>III>I>IV

Q.250 Arrange following compounds in decreasing order of electrophilic substitution.

(i)  (ii)  (iii) 

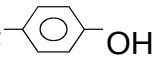
(a) i > ii > iii (b) iii > ii > i (c) ii > iii> i (d) iii>i > ii

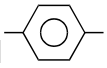
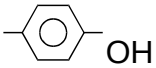
Q.251 Maximum Hyperconjugation effect is shown by

(i)  (ii)  (iii)  (iv) 

(a) i & ii (b) i only (c) i & iii (d) ii & iv

Q252. Arrange the given phenols in their decreasing order of acidity:

(I) C_6H_5–OH (II) 

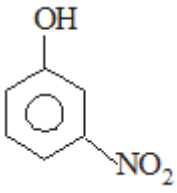
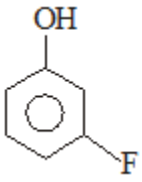
(III)  (IV) 

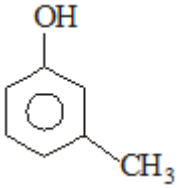
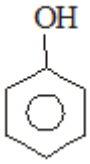
Select the correct answer from the given code:

(a) IV > III > I > II (b) IV > II > III > I

(c) IV > III > II > I (d) IV > I > III > II

Q253. The strongest acid among the following is :

(a)  (b) 

(c)  (d) 

Q254. The strongest base among the following (in Gas phase) is :

(a)Me_2NH (b) Me_3N

(c)NH_3 (d) $MeNH_2$

Q255. The strongest base among the following (in H_2O)) is :

(a)Me_2NH (b) Me_3N

(c)NH_3 (d) $MeNH_2$

Q256 Which of the following is correct order of increasing basic strength ?

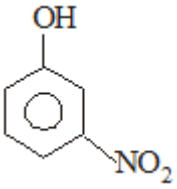
(I) $CH_3–CH_2–\ddot{N}H_2$ (II) $CH_3–CH=\ddot{N}H$

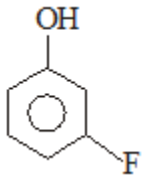
(III)CH_3-CN:

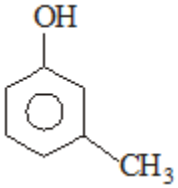
(a) I>II>III (b) III>II>I

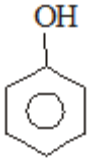
(c) II>I>III (d) II>III>I

Q257. Among the following, which has highest electron density in benzene ring?

(a) 

(b) 

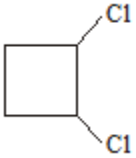
(c) 

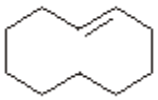
(d) 

Q258. Among the following, which has highest nucleophilicity ?

(a) CH_3^- (b)NH_2^- (c) OH^- (d)F^-

Q259 Which will form geometrical isomers?

(a) 

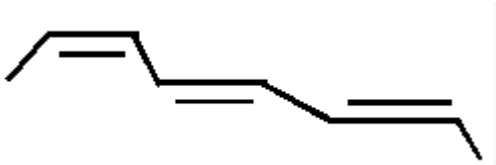
(b) $CH_3CH = NOH$ (c) 

(d) All of these

Q260 Tautomer of which of the following can show geometrical isomerism?

(a) CH_3–CHO (b) CH_3CH_2–CHO

(c) $(CH_3)_2$CH–CH=O (d) $(CH_3)_2$C=O



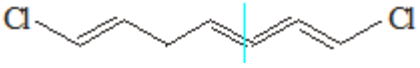
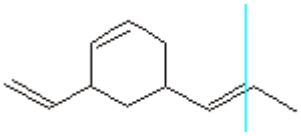
Q261 The IUPAC name of the compound :

(a) (2E, 4E, 6Z)-octa-2,4,6-triene (b) (2E, 4E, 6E)-octa-2,4,6-triene
(c) (2Z, 4E, 6Z)-octa-2,4,6-triene (d) (2Z, 4Z, 6Z)-octa-2,4,6-triene

Q.262 Total number of geometrical isomer of dimethylcyclohexane is:

(a) 6 (b) 2 (c) 4 (d) 5

Q.263 Select the correct one

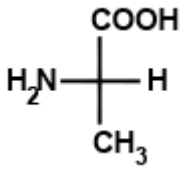
	Compound	**Number of geometrical isomers**
(a)		6
(b)		6
(c)		4
(d)		8

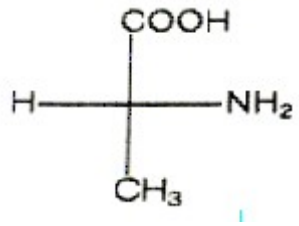
Q264. Silver salt method is used for the determination of molecular weight of which organic compound?
(a) Carboxylic acid (b) Urea (c) amine (d) ketone

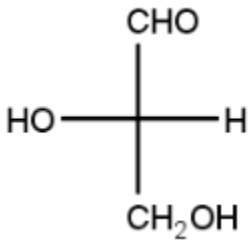
Q.265. O.66gm of chloroplatinate salt of monoacidic base is heated to produce 0.0.150 gm of Pt as residue.What will be molecular weight of organic compound?
(a) 660 (b) 150 (c) 195 (d) 221

Q266. Which one is dibasic acid ?
(a) formic acid (b) acetic acid (c) carbonic acid (d) citric acid

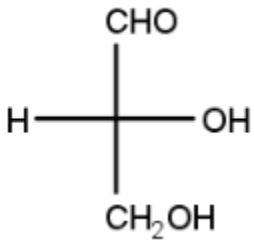
Q267. Which one is D-alanine ?

(a) 

(b) 



(c)

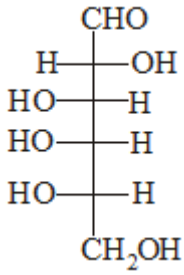


(d)

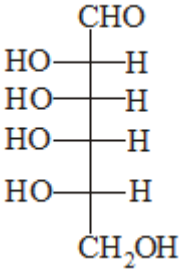
Q268. Which of the following compound will give alcohol and acid salt product with 50% NaOH solution?

(a) C_6H_5-CH_2-CHO (b) CH_3-CH_2-CHO (c) CH_3CO-CH_3 (d) HCHO

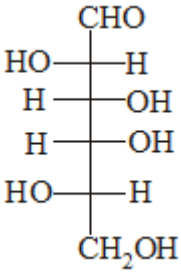
Q269 Which one is D-aldohexose?



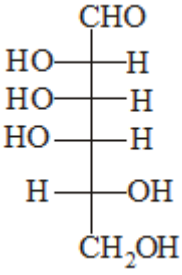
(a)



(b)



(c)



(d)

Q270. The IUPAC name of CH_3-$COCH(CH_3)_2$?

(a) 4-methyl isopropyl ketone (b) 3-methyl-2-butanone
(c) 2-methyl-3-butanone (d) ethyl methyl ketone

Q271. Which one of the following amines will not react with HNO_2 acid to give N_2 gas?

(a) CH_3NH_2 (b) $CH_3CH_2NH_2$
(c) $(CH_3)_2CH$-NH_2 (d) $(CH_3)_3N$

Q272. Which one of the following is primary amine.

(a) $(CH_3)_2NH$ (b) $CH_3CH_2NH_2$
(c) $(CH_3)_2NCH_2$ -CH_3 (d) $(CH_3)_3N$

Q273. Which one of the following is most reactive towards nucleophillic acyl substitution?

(a)RCOCl (b) RCOOR' (c) $(CH_3CO)_2O$ (d) $RCONH_2$

Q274 Total number of geometrical isomers of the following compounds.

(a) 2 (b)4 (c) 8 (d) 16

Q275. C_6H_5-CHO does not give?
(a) Tollen's reagent test (b) Schiff's reagent test
(c) Fehling solution Test (d) 2,4-D.N.P. test

Q276. Which one of the following amines does not give offensive bad smelling compound $CHCl_3$ and KOH?
(a) CH_3NH_2 (b) $CH_3CH_2NH_2$
(c) $(CH_3)_2CH\text{-}NH_2$ (d) $(CH_3)_3N$

Q277. Which one of the following acid is most acidic ?
(a) CH_3-COOH (b) CH_3CH_2COOH
(c) HCOOH (d) Cl_3C-COOH

Q278. Which one of the following does not give iodoform test ?
(a) CH_3-$COCH_3$ (b) H_3C-CH(OH)-CH_3
(c) CH_3-CHO (d) Cl_3C-CHO

Q279. Which one of the following is used as anaesthetic agent ?
(a) CH_3-$COCH_3$ (b) $CHCl_3$
(c) Ph-Cl (d) Cl_3C-CHO

Q280. Which of the following compounds will not give positive test with Tollen's reagent solution?
(a) C_6H_5-CH_2-CHO (b) CH_3-CH_2-CHO (c) CH_3CO-CH_3 (d) HCHO

Q281. Which of the following compounds will give positive test with Tollen's reagent solution?
(a) C_6H_5-CH_2-COOH (b) CH_3-CH_2-COOH (c) CH_3COOH (d) HCOOH

Q282. Which of the following compound will give Victor Meyer's Test with blood red colouration?
(a) C_6H_5-CH_2-OH (b) $(CH_3)_3COH$ (c) $(CH_3)_2CHOH$ (d) CH_3COOH

Q283. Which of the following compounds is aromatic alcohol?
(a) C_6H_5-OH (b) $(CH_3)_3COH$ (c) $(CH_3)_2CHOH$ (d) C_6H_5-CH_2-OH

Q284 Which one is polyprotic acid?
(a) C_6H_5-COOH (b) Oxalic acid (c) acetic acid (d) salicylic acid

Q285 What is unkown product (a) in the given reaction?
CH_3-CH_2-NH_2 + $CHCl_3$ + 3KOH $\rightarrow$ [A] + 3KCl +3H_2O

(a) CH_3-CH_2-NC (b) CH_3-CH_2-CN

(c) $(CH_3)_2CH\text{-}NH_2$ (d) $CH_3\text{-}CH_2\text{-}NHCH_3$

Q286. Which one of the following amines gives offensive bad smelling compound $CHCl_3$ and KOH?

(a) $(CH_3)_2NH$ (b) $CH_3CH_2NH_2$

(c) $(CH_3)_2NCH_2\text{-}CH_3$ (d) $(CH_3)_3N$

Q287 Which test is given by $CH_3\text{-}NH\text{-}CH_3$

(a) Victor meyer's test (b) Lieberman's nitroso test

(c) Tollen's Reagent test (d) Schiff's reagent test

Q288 Which one of the following is a ketone?

(a) $(CH_3)_2CO$ (b) $CH_3CH_2NH_2$

(c) $CH_3OCH_2\text{-}CH_3$ (d) $(CH_3)_3N$

Q289 What product is obtained when acetamide is reacted with Br_2 and KOH?

(a) $(CH_3NH_2$ (b) $CH_3CH_2NH_2$

(c) $CH_3CH_2\text{-}CN$ (d) $(CH_3)_3N$

Q290 What product is obtained when methanal is treated with $LiAlH_4/H_2O$?

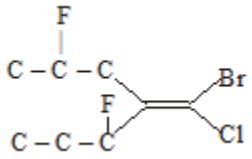
(a) ethanal (b) methanol (c) methane (d) ethene

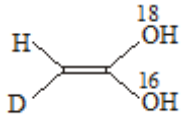
Q291. Which of the following compound will give iodoform test ?

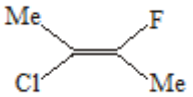
(a) $C_6H_5\text{-}CH_2\text{-}CHO$ (b) $CH_3\text{-}CH_2\text{-}CHO$

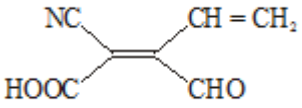
(c) $CH_3\text{-}CH_2CO\text{-}CH_2\text{-}CH_3$ (d) $CH_3\text{-}CHO$

Q292. Which one of the following has Z-designation of geometry according to CIP rule?

(a) 

(b) 

(c) 

(d) 

Q293. Which organic compound is estimated by Carius method?

(a) methanol (b) ethanal (c) ethanethiol (d) ethanamine

Q294. O.41gm of silver salt of dibasic acid is heated to produce 0.216 gm of Silver as residue. What will be molecular weight of organic compound?

(a) 196 (b) 416 (c) 216 (d) 410

Q295. Nitrogen is estimated in organic compound by ?

(a) Carius method (b) Kjeldahl method
(c) Lebieg combustion method (d) Victor meyer method

Q296. Caffeine has a molecular mass of 194. If it contains 28.9% by mass of nitrogen. The number of atom of Nitrogen in one molecule of Caffeine is
(a) 2 (b) 3 (c) 4 (d) 6

Q297. Which of the following compound will undergo aldol condensation reaction with dilute NaOH solution?
(a) C_6H_5-CHO (b) CH_3-CH_2-CHO (c) CH_2=CH-CHO (d) HCHO

Q298. Which of the following compound will give test of unsaturation with cold dilute alkaline $KMnO_4$ solution ?
(a) C_6H_5-CH_3 (b) CH_3-CH=CH_2 (c) CH_3-CH_2OH (d) $CHCl_3$

Q299. Which of the following compounds will undergo Cannizarro's reaction with conc. NaOH solution?
(a) C_6H_5-CH_2-CHO (b) CH_3-CH_2-CHO (c) CH_3CO-CH_3 (d) Ph-CHO

Q300. O.2595gm of an organic compound yielded quantitatively 0.35gm of $BaSO_4$.What will be percentage of S in organic compound?
(a) 19.6% (b) 18.5% (c) 21.6% (d) 41.0%