2011-2016

MEDICAL COLLEGE APTITUDE TEST - CHEMISTRY

UHS, LAHORE

PAST PAPERS UNIT WISE MCQS

Ali Raza
ARK

ALI RAZA KAMAL

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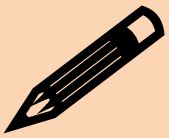

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PHYSICAL CHEMISTRY

1A FUNDAMENTAL CONCEPTS

2011

Q.1 **In mass spectrometer, detector or collector measures the:**

A) Masses of isotopes
B) Percentages of isotopes
C) Relative abundances of isotopes
D) Mass numbers of isotopes

Q.2 **How many 'Cl' (chlorine) atoms are in two moles of chlorine?**

A) $2 \times 6.02 \times 10^{-23}$ atoms
B) $35.5 \times 6.02 \times 10^{23}$ atoms
C) 2×10^{23} atoms
D) $2 \times 6.02 \times 10^{23}$ atoms

2012

Q.3 **An organic compound has empirical formula C_3H_3O, if molar mass of compound is 110.15 $gmol^{-1}$. The molecular formula of this organic compound is (A, of C=12, H=1.008 and O=16)**

A) $C_6H_6O_2$
C) C_3H_3O
C) $C_9H_9O_3$
D) $C_6H_6O_3$

Q.4 **When 8 grams (4 moles) of H_2 react with 2 moles of O_2, how many moles of water will be formed?**

A) Five
B) Four
C) Six
D) Three

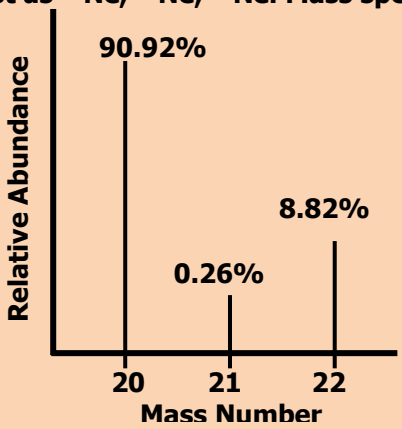
2013

Q.5 **Hydrogen burns in chlorine to produce hydrogen chloride. The ratio of masses of reactants in chemical reaction is:**

$$H_2 + Cl_2 \longrightarrow 2HCl$$

A) 1:35.5
B) 2:35.5
C) 1:71
D) 2:70

Q.6 **A sample of Neon is found to exist as ^{20}Ne, ^{21}Ne, ^{22}Ne. Mass spectrum of 'Ne' is as follow:**



What is the relative atomic mass (A, value) of Neon?

A) 20.18
B) 20.28
C) 20.10
D) 20.22

2014

Q.7 **A polymer of empirical formula CH_2 has molar mass of 28000 g mol^{-1}. Its molecular formula will be**

A) 100 times that of its empirical formula
B) 200 times that of its empirical formula
C) 500 times that of its empirical formula
D) 2000 times that of its empirical formula

Q.8 **The number of molecules in 9 g of ice (H_2O) is**

A) 6.02×10^{24}
B) 6.02×10^{23}
C) 3.01×10^{24}
D) 3.01×10^{23}

2015

Q.9 **How many moles of sodium are present in 0.1 g of sodium?**

A) 4.3×10^{-3}
B) 4.03×10^{-1}
C) 4.01×10^{-2}
D) 4.3×10^{-2}

Q.10 **With the help of spectral data given calculate the mass of Neon and encircle the best option. (Percentage of $_{10}Ne^{20}$, $_{10}Ne^{21}$ and $_{10}Ne^{22}$ are 90.92%, 0.26% and 8.82% respectively).**

A) 22.18 amu
B) 21.18 amu
C) 20.18 amu
D) 22.20 amu

2016

Q.11 **The substance for the separation of isotopes is firstly converted into the:**

A) Neutral state
B) Free state
C) Vapour state
D) Charged state

Q.12 **The number of moles of CO_2 which contain 8.00 gm of oxygen is:**

A) 0.75
B) 1.50
C) 0.25
D) 1.00

ANSWERS				
	Q.1	C	**Q.7**	D
	Q.2	D	**Q.8**	D
	Q.3	A	**Q.9**	A
	Q.4	B	**Q.10**	C
	Q.5	A	**Q.11**	C
	Q.6	B	**Q.12**	C

2A States of Matter

2011

Q.1 **Melting point of water is higher than petrol, because intermolecular forces in water are:**

A) Weaker than petrol
B) Stronger than petrol
C) Same as in petrol
D) Negligible

Q.2 **DNA molecule is double stranded, in which two chains of DNA are twisted around each other by:**

A) Hydrogen bonds
B) Vander Waal's force
C) Covalent bonds
D) Dative bonds

2012

Q.3 **The number of molecules in 22.4 dm^3 of H_2 gas at 0 °C and 1 atm are**

A) 60.2×10^{23}
B) 6.02×10^{22}
C) 6.02×10^{25}
D) 6.02×10^{22}

Q.4 **Correct order of boiling points of the given liquid is**

A) $H_2O > HF > HCl > NH_3$
B) $HF > H_2O > HCl > NH_3$
C) $H_2O > HF > NH_3 > HCl$
D) $HF > H_2O > NH_3 > HCl$

2013

Q.5 **The coordination number of Na^+ in NaCl crystal is:**

A) 6
B) 2
C) 4
D) 8

Q.6 **There are four gases H_2, He, N_2 and CO_2 at 0 °C. Which gas shows greater non-ideal behavior?**

A) He
B) CO_2
C) H_2
D) N_2

2014

Q.7 **Ice is less dense than water at:**

A) 0 °C
B) 4 °C
C) -4 °C
D) 2 °C

Q.8 **At a given temperature and pressure, the one which shows marked deviation from ideal behavior is**

A) N_2
B) N_3
C) CO_2
D) He

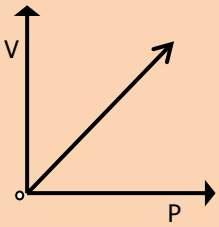
2015

Q.9 **If the volume of a gas collected at a temperature of 600 °C and pressure of 1.05×10^5 Nm^{-2} is 60 dm^3, what would be the volume of gas at STP ($P=1.01 \times 10^3$ Nm^{-2}, T = 273 K)?**

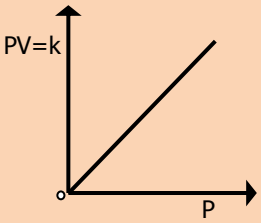
A) 25 cm^3
B) 75 cm^3
C) 100 cm^3
D) 51 cm^3

Q.10 **Which graph represents Boyle's law?**

A)



C)



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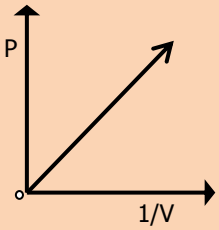
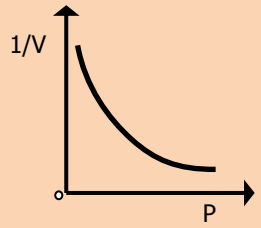


D)



2016

Q.11 **London dispersion forces are the only forces present among the:**

A) Molecules of H_2O in liquid state
B) Molecules of HCl gas
C) Atoms of helium in gaseous state at high temperature
D) Molecules of solid chlorine

Q.12 **Electrical conductivity of graphite is greater in one direction that in other due to:**

A) Isomorphism
B) Cleavage plane
C) Anisotropy
D) Symmetry

ANSWERS

Q.1	B	**Q.7**	A
Q.2	A	**Q.8**	C
Q.3	D	**Q.9**	D
Q.4	C	**Q.10**	B
Q.5	A	**Q.11**	C
Q.6	B	**Q.12**	C

3A ATOMIC STRUCTURE

2011

Q.1 **The elements for which the value of ionization energy is low, can:**

A) Gain electrons readily
B) Gains electron with difficulty
C) Loss electrons less readily
D) Lose electrons readily

Q.2 **The nature of cathode rays in discharge tube:**

A) Depends on the nature of gas taken in the discharge tube
B) Depends upon the nature of cathode in discharge tube
C) Is independent of the nature pf the gas in discharge tube
D) Depends upon the nature of anode in the discharge tube

2012

Q.3 **The relative energies of 4s, 4p and 3d orbitals are in the order**

A) 3d < 4p <4s
B) 4s < 3d < 4p
C) 4p < 4s < 3d
D) 4p < 3d < 4s

Q.4 **With increase in the value of Principal Quantum Number 'n', the shape of the s-orbitals remains the same although their sizes**

A) Decrease
B) Increase
C) Remain the same
D) May or may not remain the same

2013

Q.5 **Correct order of energy in the given subshells is:**

A) 5s > 3d > 3p > 4s
B) 5s > 3d > 4s > 3p
C) 3p > 3d > 5s > 4s
D) 3p > 3d > 4s > 5s

Q.60 **Number of electrons in the outermost shell of chloride ion (Cl^-) is:**

A) 17
B) 3
C) 1
D) 8

2014

Q.7 **According to the number of protons, neutrons and electrons given in the table, which one of the following options is correct?**

Species	Proton	Neutron	Electron
As	33	42	30
Ga	31	39	28
Ca	20	20	20

A) As^{-3}, Ga^{+3}, Ca
B) As^{+1}, Ga^{+2}, Ca
C) As^{+3}, Ga^{+3}, Ca^{+2}
D) As^{+1}, Ga, Ca^{+2}

Q.8 **If the e/m value of electron is 1.7588×10^{11} coulombs Kg^{-1}, then what would be the mass of electron in grams (charge on electron is 1.6022×10^{-19} coulombs)?**

A) 9.1095×10^{-31} g
B) 91.095×10^{-31} g
C) 9.1095×10^{-28} g
D) 0.919095×10^{-33} g

2015

Q.9 **Which one of the following pairs has the same electronic configuration as possessed by Neon (Ne-10)?**

A) Na^+, Cl^-
B) K^+, Cl^-
C) Na^+, Mg^{2+}
D) Na^+, F^-

Q.10 **There are four orbitals s, p, d and f. Which order is correct with respect to the increasing energy of the orbitals?**

A) 4s < 4p < 4d < 4f
B) 4p < 4s < 4f < 4d
C) 4s < 4f < 4p < 4d
D) 4f < 4s < 4d < 4p

2016

Q.11 **Number of neutrons in $^{66}_{30}Zn$ will be:**

A) 30
B) 35
C) 38
D) 36

Q.12 **The maximum number of electrons in electronic configuration can be calculated by using formula:**

A) 2l + 1
B) $2n^2 + 2$
C) $2n^2$
D) $2n^2 + 1$

ANSWERS

Q.1	D	**Q.7**	C
Q.2	C	**Q.8**	A
Q.3	B	**Q.9**	D
Q.4	B	**Q.10**	A
Q.5	B	**Q.11**	C
Q.6	D	**Q.12**	A

4A CHEMICAL BONDING

2011

Q.1 **The ability of an atom in a covalent bond to attract the bonding electrons is called:**

A) Ionization energy
B) Ionic bond energy
C) Electronegativity
D) Electron affinity

Q.2 **The paramagnetic character of a substance is due to:**

A) Bond pairs of electrons
B) Lone pairs of electrons
C) Unpaired electrons in atom or molecule
D) Paired electrons in valence shells of electrons

2012

Q.3 **The angle between unhybridized p-orbital and three sp^2 hybrid orbitals of each carbon atom in ether is:**

A) 120°
B) 90°
C) 109.5°
D) 180°

Q.4 **In 'H-F' bond electronegativity difference is '1.9'. What is the type of this bond?**

A) Polar covalent bond
B) Non-polar covalent bond
C) Pi (π) bond
D) Co-ordinate covalent bond

2013

Q.5 **According to valence shell electron pair repulsion theory, the repulsive forces between the electron pair of central atom of molecule are in the order:**

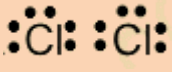
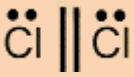
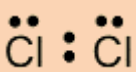
A) Lone Pair - Lone-Pair > Lone Pair - Bond Pair > Bond Pair - Bond Pair
B) Lone Pair - Bond Pair > Lone Pair - Lone Pair > Bond Pair - Bond Pair
C) Bond Pair - Bond Pair > Lone Pair - Lone Pair > Lone Pair - Bond Pair
D) One Pair - Bond Pair > Bond Pair - Bond Pair > Lone Pair - Lone Pair

Q.6 **In crystal lattice of ice, each O-atom of water molecule is attached to:**

A) Four H-atoms
B) Three H-atoms
C) One H-atom
D) Two H-atoms

2014

Q.7 **The suitable representation of dot structure of chlorine molecule is:**

A) 
B) 
C) 
D) 

Q.8 **When the two partially filled atomic orbitals overlap in such a way that the probability of finding electron is maximum around the line joining the two nuclei, the result is the formation of**

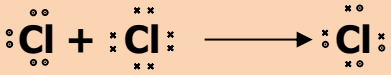
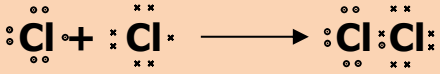
A) Sigma Bond
B) Pi-Bond
C) Hydrogen Bond
D) Metallic Bond

2015

Q.9 **Which one of the following hydrogen bonds is stronger than others?**

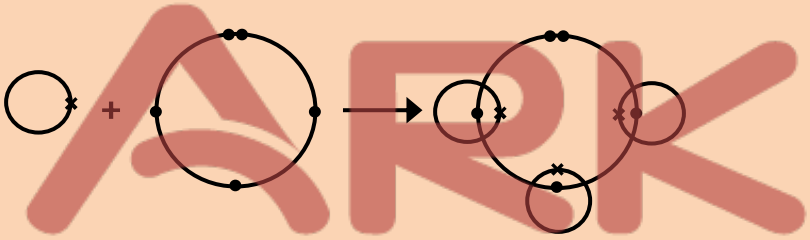
A) $N^{\delta-}—H^{\delta+}$ ..... $N^{\delta-}—H^{\delta+}$
B) $F^{\delta-}—H^{\delta+}$ ..... $F^{\delta-}—H^{\delta+}$
C) $O^{\delta-}—H^{\delta+}$ ..... $O^{\delta-}—H^{\delta+}$
D) $N^{\delta-}—H^{\delta+}$ ..... $O^{\delta-}—H^{\delta+}$

Q.10 **Which of the following is the correct dot and cross diagram of bonding between two chlorine atoms?**

A) 
B) 
C) 
D) 

2016

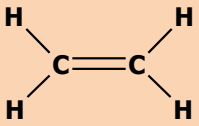
Q.11



Choose the right molecule.

A) CH_3
B) CO
C) H_2O
D) NH_3

Q.12



Calculate the number of σ bonds and π bonds in the molecule.

A) 1π and 5σ bonds
B) 2π and 4σ bonds
C) 3π and 3σ bonds
D) 6π and 6σ bonds

ANSWERS				
	Q.1	C	**Q.7**	B
	Q.2	C	**Q.8**	A
	Q.3	B	**Q.9**	B
	Q.4	A	**Q.10**	C
	Q.5	A	**Q.11**	D
	Q.6	A	**Q.12**	A

5A CHEMICAL ENERGETICS

2011

Q.1 **Lattice energy of an ionic crystal is the enthalpy of:**

A) Combustion
B) Dissociation
C) Dissolution
D) Formation

Q.2 **In standard enthalpy of atomization, heat of the surrounding:**

A) Remains unchanged
B) Increases
C) Increases than decreases
D) Decreases

2012

Q.3 **'ΔH' will be given a negative sign in**

A) Exothermic reactions
B) Decomposition reactions
C) Dissociation reaction
D) Endothermic reactions

Q.4 **Lattice energy of an ionic crystal is the enthalpy of**

A) Combustion
B) Dissociation
C) Dissolution
D) Formation

2013

Q.5 **Heat of formation ($\Delta H_f°$) for CO_2 is:**

A) -394 kJ/mole
B) +394 kJ/mole
C) -294 kJ/mole
D) -390 kJ/mole

Q.6 **Reactants have high energy than products in:**

A) Exothermic reactions
B) Endothermic reactions
C) Photochemical reactions
D) Non-spontaneous reactions

2014

Q.7 $2H_2 + O_2 \longrightarrow 2H_2O$ $\quad \Delta H = +285.5\ kJ\ mol^{-1}$

What will be the enthalpy change in the above reaction?

A) 205.5 kJ/mol
B) Zero kJ/mol
C) -205.5 kJ/mol
D) 1 kJ/mol

Q.8 **Combustion of graphite to form CO_2 can be done by two ways. Reactions are given as follows:**

$C + O_2 \longrightarrow CO_2$ $\quad \Delta H = -393.7\ kJ\ mol^{-1}$
$C + \frac{1}{2}O_2 \longrightarrow CO$ $\quad \Delta H = ?$
$CO + \frac{1}{2}O_2 \longrightarrow CO$ $\quad \Delta H = -283\ kJ\ mol^{-1}$

What will be enthalpy of formation of CO?

A) -676 kJ mol^{-1}
B) -110 kJ mol^{-1}
C) 110 kJ mol^{-1}
D) 676 kJ mol^{-1}

2015

Q.9 **The equation that represents standard enthalpy of atomization of hydrogen is:**

A) $\frac{1}{2}H_2O_{(l)} \longrightarrow H_{2(g)} + \frac{1}{2}O_{(g)}$ +218 kJ mol^{-1}

B) $\frac{1}{2}H_2O_{(l)} \longrightarrow H_{2(g)} + \frac{1}{2}O_{(g)}$ –218 kJ mol^{-1}

C) $\frac{1}{2}H_{2(g)} \longrightarrow H_{(g)}$ +218 kJ mol^{-1}

D) $\frac{1}{2}H_{2(g)} \longrightarrow H_{(g)}$ –218 kJ mol^{-1}

Q.10 **Standard enthalpy of combustion of graphite at 25 °C is –393.51 kJ mol^{-1} and that of diamond is –395.41 kJ mol^{-1}. The enthalpy change for graphite is:**

A) – 1.91
B) +2.1
C) –2.1
D) +1.91

2016

Q.11 $\mathbf{\frac{1}{2}H_{2(g)} \longrightarrow H_{(g)}}$ **ΔH = 218 kJmol^{-1}**

In this reaction, ΔH will be called:

A) Enthalpy of atomization
B) Enthalpy of decomposition
C) Enthalpy of formation
D) Enthalpy of the dissociation

Q.12 $\mathbf{Mg + \frac{1}{2}O_{2(g)} \longrightarrow MgO_{(g)}}$ **+ -692 kJmol^{-1} at STP.**

Enthalpy of the above reaction will be called:

A) $\Delta H°_{at}$
B) $\Delta H°_{s}$
C) $\Delta H°_{sol}$
D) $\Delta H°_{l}$

ANSWERS

Q.1	D	**Q.7**	C
Q.2	D	**Q.8**	B
Q.3	A	**Q.9**	C
Q.4	D	**Q.10**	D
Q.5	A	**Q.11**	A
Q.6	A	**Q.12**	D

6A SOLUTIONS

2011

Q.1 **Mole fraction of any compound us the ratio of moles of all components in a:**

A) Compound
B) Solution
C) Molecule
D) Solid

Q.2 **Molarity is defined as the number of moles of any substance dissolved:**

A) Per dm^3 of water
B) In one gram of water
C) Per m^3 of water
D) In 100 ml of water

2012

Q.3 **As number of solute particles increases, freezing point of the solution:**

A) Remains the same
B) Increases
C) First increases, then decreases
D) Decreases

Q.4 **Boiling point constants help us to determine**

A) Molar masses
B) Volumes
C) Pressures
D) Masses

2013

Q.5 **If 18.0 g of glucose is dissolved in 1 kg of water, boiling point of this solution should be:**

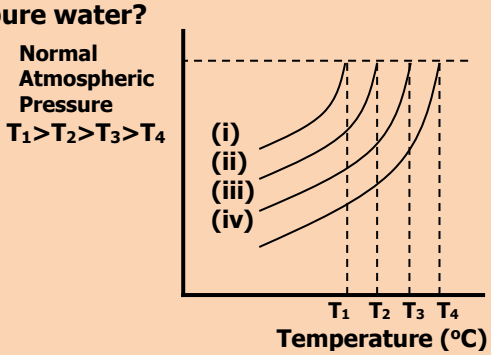
A) 100.52 °C
B) 100.00 °C
C) 100.052 °C
D) Less than 100 °C

Q.6 **Molal freezing point constant of water is:**

A) 1.86
B) 2.86
C) 11.86
D) 0.52

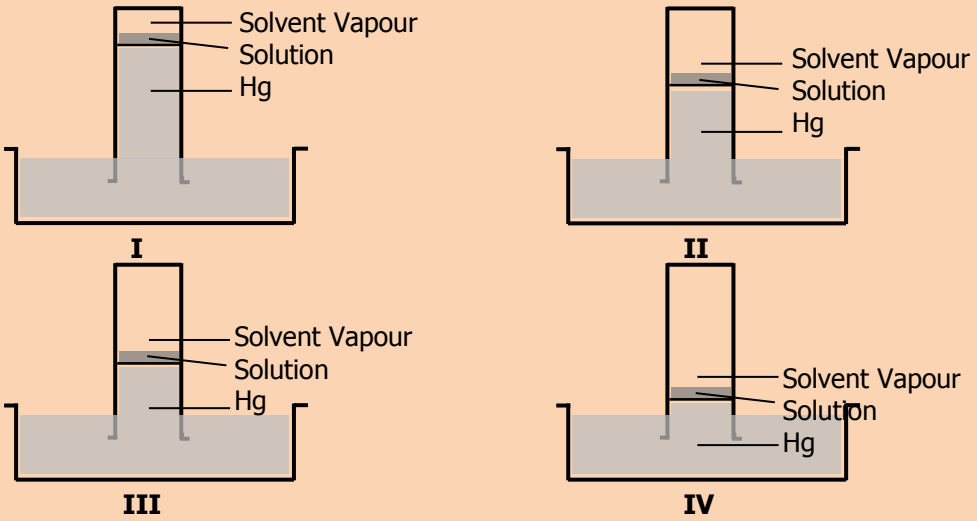
2014

Q.7 **The vapor pressure lines for pure as well as solutions of different concentrations are shown. Which line represents pure water?**



A) (i)
B) (ii)
C) (iii)
D) (iv)

Q.8 **One mole of glucose was dissolved in 1 kg of water, ethanol, ether and benzene separately and the molal boiling point constant of each individual solution was found to be 0.52, 1.75, 2.16 and 2.70 in the units of / °C kg mol^{-1} respectively. Which of the following figures shows benzene as solvent in solution?**



A) I
B) II
C) III
D) IV

2015

Q.9 **10.0 grams of glucose are dissolved in water to make 100 cm^3 of its solution, its molarity is:**
A) 0.55
B) 0.1
C) 10
D) 1

Q.10 **Given solution contains 16.0 g of CH_3OH, 92.0 g of C_2H_5OH and 36 g of water. Which statement about mole fraction of the components is true?**
A) Mole fraction of CH_3OH is highest among all components
B) Mole fraction of C_2H_5OH and H_2O is the same
C) Mole fraction of CH_3OH and C_2H_5OH is same
D) Mole fraction of H_2O is the lowest among all

2016

Q.11 **Freezing point will also be defined as that temperature at which its solid and liquid phases have the same:**
A) Concentration
B) Ratio between the particles
C) Vapour pressure
D) Attraction between the phases

Q.12 **What mass of NaOH is present in 0.5 mol of sodium hydroxide?**
A) 40 gm
B) 2.5 gm
C) 15 gm
D) 20 gm

ANSWERS						
	Q.1	B	**Q.5**	C	**Q.9**	A
	Q.2	A	**Q.6**	A	**Q.10**	B
	Q.3	D	**Q.7**	A	**Q.11**	C
	Q.4	A	**Q.8**	A	**Q.12**	D

7A ELECTROCHEMISTRY

2011

Q.1 **In electrolytic cell, a salt bridge is used in order to:**

A) Pass the electric current
B) Prevent the flow of ions
C) Mix solution of two half cells
D) Allow movement of ions b/w two half cells

Q.2 **In all oxidation reactions, atoms of an element in a chemical species lose electrons and increase their:**

A) Oxidation states
B) Reductions
C) Electrode
D) Negative charges

2012

Q.3 **In electrolysis of aqueous $CuCl_2$, the metal deposited at cathode is**

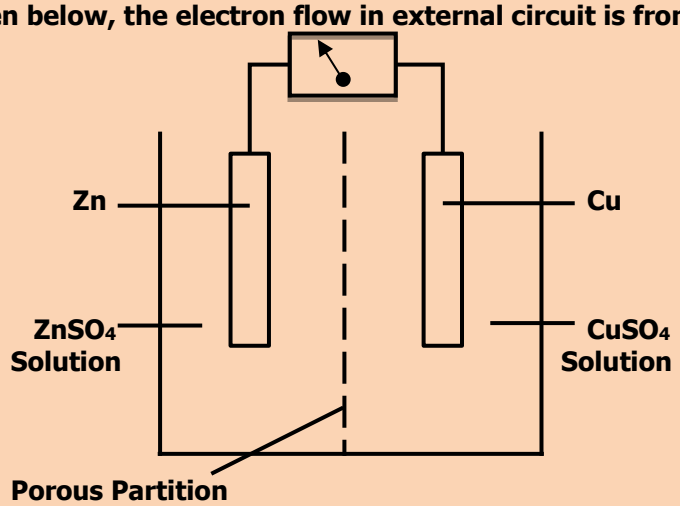
A) Sodium
B) Aluminium
C) Lead
D) Copper

Q.4 **In $MgCl_2$, the oxidation state of 'Cl' is**

A) Zero
B) +2
C) -2
D) -1

2013

Q.5 **In the figure given below, the electron flow in external circuit is from:**



A) Copper to zinc electrode
B) Right to left
C) Porous partition to zinc electrode
D) Zinc to copper electrode

Q.6 **Which one of the following is a redox reaction?**

A) $NaCl + AgNO_3 \longrightarrow NaNO_3 + AgCl_2$
B) $2Cl^- \longrightarrow Cl_2 + 2e^-$
C) $2Na + Cl_2 \longrightarrow 2NaCl$
D) $Na^+ + 1e^- \longrightarrow Na$

2014

Q.7 **In SO_4^{-2} the oxidation number of Sulphur is**

A) -8
B) +8
C) -6
D) +6

Q.8 **Coinage metals Cu, Ag, and Au are the least reactive because they have:**

A) Negative reduction potential
B) Positive reduction potential
C) Negative oxidation potential
D) Positive oxidation potential

2015

Q.9 **Study the following facts**

$$Zn \longrightarrow Zn^{+2} + 2e^- \qquad E^o = +0.76\ V$$

$$Cu \longrightarrow Cu^{+2} + 2e^- \qquad E^o = -0.34\ V$$

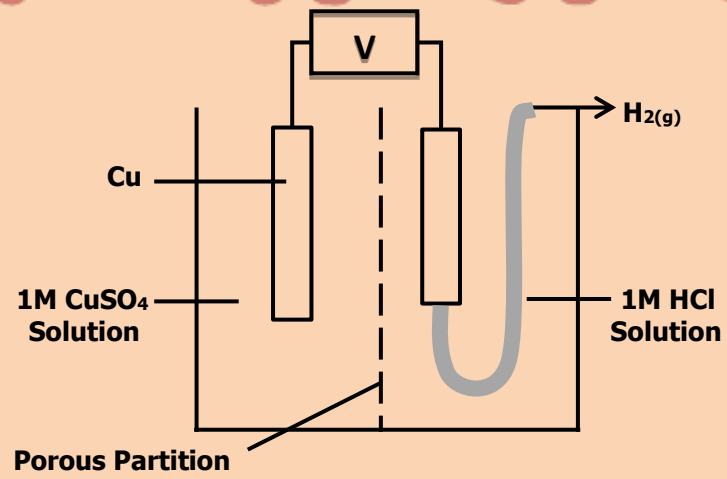
A) $Cu + Zn^{+2} \longrightarrow Cu^{+2} + Zn$
B) $Cu^{+2} + Zn^{+2} \longrightarrow Cu + Zn$
C) $Cu^{+2} + Zn \longrightarrow Cu + Zn^{+2}$
D) $Cu^{+2} + Zn^{+2} \longrightarrow Cu + Zn^{+2}$

Q.10 **Keeping in mind the electrode potential, which one of the following reactions is feasible?**

A) $Zn^{+2} + Cu \longrightarrow Cu^{+2} + Zn$
B) $Zn + MgSO_4 \longrightarrow ZnSO_4 + Mg$
C) $Fe + CuSO_4 \longrightarrow FeSO_4 + Cu$
D) $Cd + MgSO_4 \longrightarrow CdSO_4 + Mg$

2016

Q.11



The diagram shows a galvanic cell. The current will flow from:

A) Hydrogen electrode to copper electrode
B) Copper electrode to hydrogen electrode
C) Hydrogen electrode to HCl solution
D) $CuSO_4$ solution to hydrogen electrode

Q.12 **Study the following redox reaction:**

$$10Cl^- + 16H^+ + 2MnO_4^- \longrightarrow 5Cl_2 + 2Mn^{+2} + 8H_2O$$

A) Manganese is oxidized from +7 to +2
B) Chlorine ions are reduced from -1 to zero
C) Chlorine is reduced from zero to -1
D) Manganese is reduced from +7 to +2

ANSWERS				
	Q.1	D	**Q.7**	D
	Q.2	A	**Q.8**	B
	Q.3	D	**Q.9**	C
	Q.4	D	**Q.10**	C
	Q.5	D	**Q.11**	A
	Q.6	C	**Q.12**	D

8A CHEMICAL EQUILIBRIUM

2011

Q.1 **In 'AgCl' solution. Some salt of NaCl is added, 'AgCl' will be precipitated due to:**
A) Solubility
B) Electrolyte
C) Unsaturation effect
D) Common ion effect

Q.2 **'Ka' for an acid is higher, the stronger is the acid; relate the strength an acid with 'pKa'**
A) Higher pKa, weaker the acid
B) Lower pKa, stronger the acid
C) pKa has no relation with acid strength
D) Both A and B

2012

Q.3 **Formation of NH_3 is reversible and exothermic process, what will happen on cooling?**
A) More reactant will form
B) More N_2 will be formed
C) More H_2 will be formed
D) More product (NH_3) will be formed

Q.4 **A buffer solution is that which resists/minimizes the change in**
A) pOH
B) pH
C) pKa
D) pKb

2013

Q.5 **The chemical substance, when dissolved in water, gives "H^+" is called:**
A) Acid
B) Base
C) Amphoteric
D) Neutral

Q.6 **The 'pH' of our blood is:**
A) 6.7 – 8
B) 7.9
C) 7.5
D) 7.35 – 7.4

2014

Q.7 **The value of equilibrium constant (K_c) for the reaction $2HF_{(s)} \rightleftharpoons H_{2(g)} + F_{2(g)}$ is 10^{-13} at 2000 °C. Calculate the value of K_p for this reaction:**
A) 2×10^{-13}
B) 10^{-13}
C) 186×10^{-13}
D) 3.48×10^{-9}

Q.8 **What will be the pH of a solution of NaOH with a concentration of 10^{-3} M?**
A) 3
B) 14
C) 11
D) 7

2015

Q.9 **What is the correct relation between pH and pK?**

A) $pH = pKa + \log\left[\frac{Acid}{Base}\right]$

B) $pH = pKa - \log\left[\frac{Acid}{Base}\right]$

C) $pH = pKa - \log\left[\frac{Base}{Acid}\right]$

D) $pH = pKa + \log\left[\frac{Base}{Acid}\right]$

Q.10 **Which one of the following is the correct presentation for K_{sp}?**

$$AgCl \longrightarrow Ag^{+} + Cl^{-}$$

A) $K_{sp} = \frac{[AgCl]}{[Ag^{+1}]\ [Cl^{-1}]}$

B) $K_{sp} = [Ag^{+1}]\ [Cl^{-1}]$

C) $K_{sp} = \frac{[Ag^{+1}]\ [Cl^{-1}]}{[AgCl]}$

D) $K_{sp} = [AgCl]$

2016

Q.11 **Human blood maintains its pH between:**

A) 6.50 - 7.00
B) 7.20 - 7.25
C) 7.50 - 7.55
D) 7.35 - 7.40

Q.12 **Value of K_{sp} for $PbSO_4$ system at 25 °C is equal to:**

A) 1.6×10^{-5} mol^2dm^{-6}
B) 1.6×10^{-6} mol^2dm^{-6}
C) 1.6×10^{-8} mol^2dm^{-6}
D) 1.6×10^{-7} mol^2dm^{-6}

ANSWERS

Q.1	D	**Q.7**	B
Q.2	D	**Q.8**	C
Q.3	D	**Q.9**	B
Q.4	B	**Q.10**	B
Q.5	A	**Q.11**	D
Q.6	D	**Q.12**	C

9A REACTION KINETICS

2011

Q.1 **It is experimentally found that a catalyst is used to:**

A) Lower the activation energy
B) Increase the activation energy
C) Lower the pH
D) Decrease the temp of the reaction

Q.2 **According to collision theory of bimolecular reaction sin gas phase, the minimum amount of energy required for an effective collision is known as:**

A) Heat of reaction
B) Rate of reaction
C) Has no effect on the reaction
D) Energy of activation

2012

Q.3 **In some reactions, a product formed acts as a catalyst. The phenomenon is called**

A) Negative Catalysis
B) Activation of Catalyst
C) Hetergeneous catalysis
D) Autocatalysis

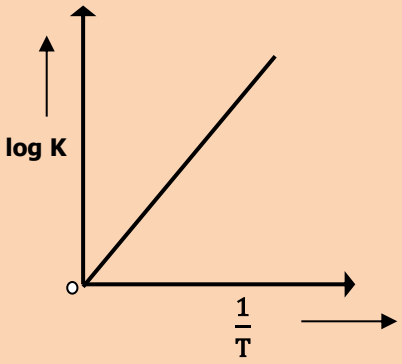
Q.4 **The reaction rate in forward direction decreases with the passage of time because**

A) Concentration of reactants decrease
B) Concentration of product decreases
C) The order of reaction changes
D) Temperature of the system changes

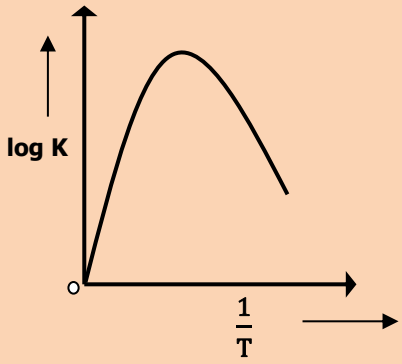
2013

Q.5 **By considering Arrhenius equation, the graph between '$\frac{1}{T}$' and 'log K' given a curve of the type:**

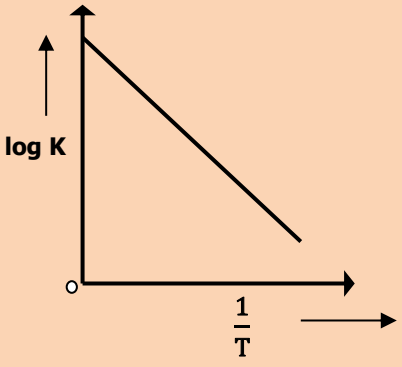
A)



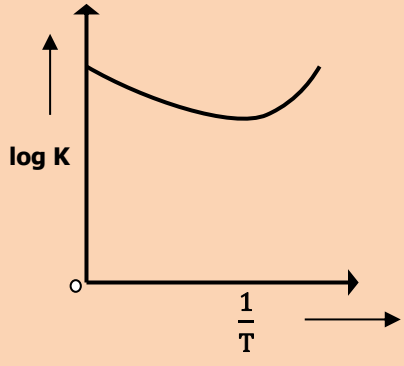
C)



B)



D)



Q.6 **In zero order reactions, the rate is independent of:**

A) Concentration of the product
B) Concentration of the reactant
C) Temperature of the reaction
D) Surface area of the product

2014

Q.7 **If the reactant or product of a chemical reaction can absorb ultraviolet, visible or infrared radiation, then the rate of a chemical reaction can best be measured by which one of the following methods?**

A) Chemical method
B) Spectrometry
C) Graphical method
D) Differential method

Q.8 **For the reaction $2NO + O_2 \rightleftharpoons 2NO_2$, the rate equation for the forward reaction is**

A) Rate = k $[NO]$ $[O_2]$
B) Rate = k $[NO]^2[O_2]$
C) Rate = k $[NO_2]^2$
D) Rate = k $[NO_2]$

2015

Q.9 **The half-life of N_2O_5 at 0 °C is 24 minutes. How long will it take for sample of N_2O_5 to decay to 25% of its original concentration?**

A) 24 minutes
B) 72 minutes
C) 120 minutes
D) 48 minutes

Q.10 **When the change in concentration is 6×10^{-4} mol dm^{-3} and time for that change is 10 seconds, the rate of reaction will be**

A) 6×10^{-3} mol dm^{-3} sec^{-1}
B) 6×10^{-4} mol dm^{-3} se^{-1}
C) 6×10^{-2} mol dm^{-3} sec^{-1}
D) 6×10^{-5} mol dm^{-3} sec^{-1}

2016

Q.11 **$2A + B \longrightarrow$ Product**
If the reactant 'B' is in excess, the order of reaction with respect to 'A' in given rate law, Rate = $k[A]^2[B]$ is:

A) 2nd order reaction
B) 1st order reaction
C) Pseudo 1st order reaction
D) 3rd order reaction

Q.12 **The rate constant 'k' is 0.693 min^{-1}. The half-life for the 1st order reaction will be:**

A) 1 min
B) 2 min
C) 0.693 min
D) 4 min

ANSWERS				
	Q.1	A	**Q.7**	B
	Q.2	D	**Q.8**	B
	Q.3	D	**Q.9**	D
	Q.4	A	**Q.10**	D
	Q.5	B	**Q.11**	A
	Q.6	B	**Q.12**	A

INORGANIC CHEMISTRY

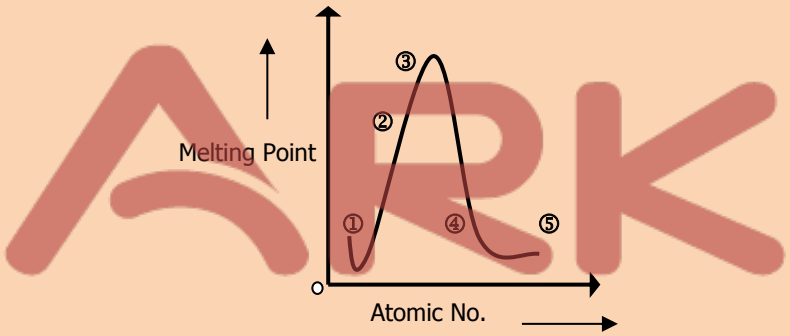
1B PERIODS

2011

Q.1 **Carbon exists as allotropes, which are different crystalline or molecular forms of the same substance. Graphite and diamond are allotropes of carbon. Diamond is a non-conductor whereas graphite is a good conductor because:**

A) Graphite has a layered structure
B) In graphite, all valence electrons are tetrahedrally bound
C) In graphite one of valence electron is free to move
D) Graphite is soft and greasy

Q.2 **The diagram below is a plot of melting points of elements of second period against their atomic numbers. Lithium and fluorine are placed at the extreme ends of the plot, on the basis of melting points where will you place Carbon among the empty slots on the plot?**



A) 1
B) 2
C) 4
D) 3

2012

Q.3 **Which one remains same along a period?**

A) Atomic radius
B) Melting point
C) Number of shells (orbits)
D) Electrical conductivity

Q.4 **More the ionization energy of an element:**

A) More the electropositivity
B) More the reducing power
C) Less the metallic character
D) Bigger the atomic radius

2013

Q.5 **What is the trend of melting and boiling point of the elements of short periods as we move from left to right in a periodic table?**

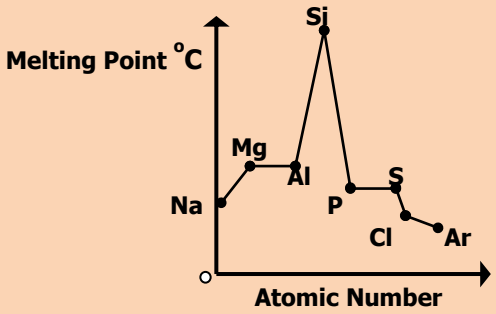
A) Melting and boiling points first decrease then increase
B) Melting and boiling points increase gradually
C) Melting and boiling points first increase then decrease
D) Melting and boiling points decrease gradually

Q.6 **Along a period, atomic radius decreases. This gradual decrease in radius is due to:**

A) Increase in number of electrons in valence shells
B) Increase in number of protons in the nucleus
C) Decrease in number of shells
D) Increase in number of shells

2014

Q.7 **The trends, in melting points of the elements of 3rd period, are depicted in figure below.**



The sharp decrease observed from 'Si' to 'P' is due to

A) Decrease in atomic radius from 'Si' to 'P'
B) Change in bonding and structure of two elements
C) Different universities of two elements
D) Increase in electron density from 'Si' to 'P'

Q.8 **Arrange the following elements according to the trend of ionization energies. (C, N, Ne, B)**

A) Ne < N < C < B
B) B < N < C < Na
C) B < C < N < Na
D) Ne < B < C < N

2015

Q.9 **Which one of the following will have the smallest radius?**

A) Al^{+3}
B) Si^{+4}
C) Mg^{+2}
D) Na^{+1}

Q.10 **Keeping in view the size of atoms, which order is correct?**

A) N > C
B) P > Si
C) Ar > Cl
D) Li > Be

2016

Q.11 **Melting points of group II-A elements are higher than those of group I-A because:**

A) Atoms of II-A elements have smaller size
B) II-A elements are more reactive
C) Atoms of II-A elements provide two binding electrons
D) I-A elements have smaller atomic radius

Q.12 **The ionic radius of fluoride ion is:**

A) 72 pm
B) 95 pm
C) 136 pm
D) 157 pm

ANSWERS						
	Q.1	C	**Q.5**	C	**Q.9**	B
	Q.2	D	**Q.6**	D	**Q.10**	D
	Q.3	C	**Q.7**	B	**Q.11**	C
	Q.4	C	**Q.8**	C	**Q.12**	C

2B GROUPS

2011

Q.1 **When elements of group II-A (alkaline earth metals) are exposed to air, they quickly become coated with a layer of oxide. What is the purpose of this oxide layer?**

A) The oxide layer exposes the metal to Atmospheric attack
B) The oxide layer increases the reactivity of metal
C) The oxide layer protects the metal from further atmospheric attack
D) The oxide layer gives the metal a shiny silvery appearance

Q.2 **In silicon dioxide each silicon atom is tetrahedrally bonded to four oxygen atoms and each oxygen atom is bonded to two silicon atoms. The ratio of silicon to oxygen atoms is:**

A) 2:2
B) 1:2
C) 2:1
D) 1:4

2012

Q.3 **Alkaline earth metal hydroxides decompose on heating. Which of the following reactions is a correct representation of this decomposition?**

A) $M(OH)_{2(s)} \longrightarrow MO_{(s)} + H_2O_{(l)}$
B) $MOH_{(s)} \longrightarrow M_2O_{(s)} + H_2O_{(l)}$
C) $2MOH_{2(s)} \longrightarrow 2MO_{(s)} + H_{2(l)}$
D) $4MOH_{(s)} \longrightarrow 4M_{(s)} + 2H_2O_{(l)} + O_2$

Q.4 **Carbon has the unique ability to form long chains by bonding with other carbon atoms. This property of self-linking in carbon is known as:**

A) Condensation
B) Polymerization
C) Cyclization
D) Catenation

2013

Q.5 **Alkaline earth metal oxides react with water to give hydroxides. The solubility of alkaline earth metal oxides in water increases as we move from top to bottom in a group. Which of the following alkaline earth metal oxides is least soluble in water?**

A) MgO
B) CaO
C) BaO
D) SrO

Q.6 **The electronic structure of carbon monoxide is represented as:**

A) :C⇄O:
B) :C≡Ö:
C) C≡Ö:
D) Ċ≡Ö

2014

Q.7 **Radon is _____ emitter and being radioactive is used in _____ treatment in radiotherapy:**

A) β, cancer
B) α, cancer
C) α, kidney stone
D) β, kidney stone

Q.8 **Which one of the following noble gases is used for providing an inert atmosphere for welding?**

A) Helium
B) Neon
C) Argon
D) Krypton

2015

Q.9 **On the basis of oxidizing power of halogens, which reaction is possible?**

A) $I_2 + 2Cl^- \longrightarrow Cl_2 + 2I^-$
B) $Br_2 + 2I^- \longrightarrow I_2 + 2Br^-$
C) $Cl_2 + 2F^- \longrightarrow F_2 + 2Cl^-$
D) $I_2 + 2Br^- \longrightarrow Br_2 + 2I^-$

Q.10 **Which one of the following gases is used as mixture for breathing by sea divers?**

A) Oxygen and Nitrogen
B) Nitrogen and Helium
C) Helium and Oxygen
D) Helium and Hydrogen

2016

Q.11 **$2NaOH_{(aq)} + Cl_{2(g)} \longrightarrow NaCl + NaClO + H_2O$ proceed at:**

A) 500 °C
B) 200 °C
C) -10 °C
D) 15 °C

Q.12 **Which halogen molecule 'X_2' has lowest dissociation energy?**

A) Cl_2
B) Br_2
C) I_2
D) F_2

ANSWERS

Q.1	C	**Q.7**	B
Q.2	B	**Q.8**	A
Q.3	A	**Q.9**	B
Q.4	D	**Q.10**	C
Q.5	A	**Q.11**	D
Q.6	A	**Q.12**	D

3B TRANSITION ELEMENTS

2011

Q.1 **Hydrogenation of unsaturated oils is done by using:**

A) Finally divided nickel
B) Finally divided iron
C) Vanadium pentaoxide
D) Copper

Q.2 **Pick the correct statement:**

A) Chelates are usually more stable than ordinary complexes
B) Ordinary complexes are more stable than chelates
C) Monodentate ligands form the chelates
D) Chelates have no ring structures

2012

Q.3 **Oxidation state of 'Mn' in $KMnO_4$, K_2MnO_4, MnO_2 and $MnSO_4$ is in the order:**

A) +7, +6, +2, +4
B) +6, +7, +2, +4
C) +7, +6, +4, +2
D) +4, +6, +7, +2

Q.4 **Which pair of transition elements shows abnormal electronic configuration?**

A) Sc and Zn
B) Cu and Sc
C) Zn and Cu
D) Cu and Cr

2013

Q.5 **Which one pair has the same oxidation state of 'Fe'?**

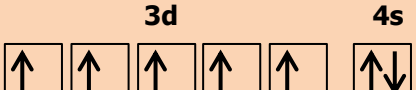
A) $FeSO_4$ and $FeCl_3$
B) $FeCl_2$ and $FeCl_3$
C) $FeSO_4$ and $FeCl_2$
D) $Fe_2(SO_4)_3$ and $FeSO_4$

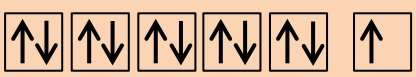
Q.6 **Oxidation state of 'Fe' in $K_3[Fe(CN)_6]$ is:**

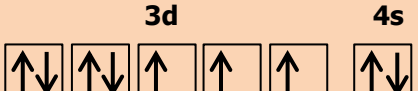
A) +2
B) +3
C) -6
D) -3

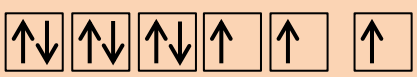
2014

Q.7 **Electronic configuration of Manganese (Mn) is**

A) Mn (Ar) 

B) Mn (Ar) 

C) Mn (Ar) 

D) Mn (Ar) 

Q.8 **The percentage of carbon in different types of iron products is in the order of**

A) Cast Iron > Wrought Iron > Steel
B) Wrought Iron > Steel > Cast Iron
C) Cast Iron > Steel > Wrought Iron
D) Cast Iron > Steel > Wrought Iron

2015

Q.9 **$[Ti(H_2O)_6]^{+3}$ transmits**

A) Yellow and Red light
B) Yellow and Blue light
C) Red and white light
D) Red and blue light

Q.10 **Electronic configuration of Gold [Au79] is**

A) [Xe] $4f^{14}$, $5d^{10}$, $6s^1$
B) [Xe] $4f^{10}$, $5d^{10}$, $6s^2$
C) [Xe] $4f^{14}$, $5d^9$, $6s^2$
D) [Xe]$4f^{14}$, $5d^{10}$, $6s^2$

2016

Q.11 **The anomalous electronic configuration shown by chromium and copper among 3-d series of elements is due to:**

A) Colour of ions of these metals
B) Variable oxidation states of metals
C) Stability associated with this configuration
D) Complex formation tendency of metals

Q.12 **Which element of 3d series of periodic table shows the electronic configuration of $3d^6$, $4s^2$?**

A) Copper
B) Cobalt
C) Zinc
D) Nickel

ANSWERS

Q.1	A	**Q.7**	A
Q.2	A	**Q.8**	C
Q.3	C	**Q.9**	D
Q.4	D	**Q.10**	A
Q.5	C	**Q.11**	C
Q.6	A	**Q.12**	D

4B ELEMENTS OF BIOLOGICAL IMPORTANCE

2011

Q.1 **In contact process, the catalyst used for the conversion of Sulphur dioxide to Sulphur trioxide is:**

A) Magnesium oxide
B) Aluminum oxide
C) Silicon dioxide
D) Vanadium pentoxide

Q.2 **The unpolluted natural rain water is slightly acidic due to the reaction of rain water with:**

A) Sulphur dioxide
B) Oxides of nitrogen
C) Carbon dioxide
D) Hydrogen present in air

Q.3 **In the Haber's process for the manufacturing of ammonia, nitrogen is taken from:**

A) Proteins occurring in living bodies
B) Ammonium salts obtained industrially
C) Air
D) Mineral containing nitrates

Q.4 **In comparison with oxygen gas, a strong triple bond is present between two nitrogen atoms in a molecule and therefore nitrogen gas is:**

A) Highly reactive gas
B) Completely inert like noble gases
C) Very less reactive gas
D) Moderately reactive gas

2012

Q.5 **The acid rain water has pH:**

A) Below 5
B) 7
C) Between 5 and 7
D) Between 7 and 14

Q.6 **In Contact Process for manufacturing sulphuric acid, Sulphur trioxide (SO_3) is not absorbed in water because**

A) The reaction does not go to completion
B) The reaction is highly exothermic
C) The reaction is quite slow
D) SO_3 is insoluble in water

Q.7 **In modern Haber Process Plants, the temperature maintained during the process is**

A) 670 – 770 K (400 °C – 500 °C)
B) 270 – 370 K (0 °C – 100 °C)
C) 370 – 470 K (100 °C – 200 °C)
D) 570 – 600 K (300 °C – 380 °C)

Q.8 **In the Haber process for manufacturing of ammonia, Nitrogen is taken from**

A) Proteins occurring in living bodies
B) Ammonium salts obtained industrially
C) Air
D) Minerals containing nitrates

2013

Q.9 **The nature of an aqueous solution of ammonia (NH_3) is:**

A) Amphoteric
B) Neutral
C) Acidic
D) Basic

Q.10 **Unpolluted rain water has a pH of:**

A) 4.9
B) 5.6
C) 5.3
D) 7.0

Q.11 **In comparison with oxygen gas, a strong triple bond is present between two nitrogen atoms in a molecule and therefore nitrogen gas is:**

A) Highly reactive gas
B) Completely inert like noble gases
C) Moderately reactive gas
D) Very less reactive gas

Q.12 **The catalyst used in the Haber's process is:**

A) Magnesium oxide
B) Aluminium oxide
C) Silicon oxide
D) Iron crystals with metal oxide promoters

2014

Q.13 **Which one of the following is correct equation of 1st ionization of sulphuric acid?**

A) $H_2SO_{4(aq)} + H_2O_{(l)} \longrightarrow 2H^+ + SO_4^{2-}$
B) $H_2SO_{4(aq)} + H_2O_{(l)} \longrightarrow H^+_{(aq)} + HSO_4^-$
C) $H_2SO_{4(aq)} + H_2O_{(l)} \longrightarrow 2H^+ + SO_4^{2-}$
D) $H_2SO_{4(aq)} + H_2O_{(l)} \longrightarrow H_3O^+ + SO_4^{2-}$

Q.14 **Which one of the following is the correct chemical reaction for Ammonia formation by Haber process?**

A) $N_{2(g)} + 3H_{2(g)} \longrightarrow 2NH_{3(g)}$
B) $2N_{(g)} + 3H_{2(g)} \rightleftharpoons NH_{3(g)}$
C) $2N_{(g)} + 3H_{2(g)} \longrightarrow 2NH_{3(g)}$
D) $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$

Q.15 **The pH of acid rain is**

A) 7
B) Between 5 and 7
C) Below 5
D) Between 7 and 14

Q.16 **Which one of the following products is obtained when sulphur trioxide is absorbed in concentrated sulphuric acid?**

A) Oleum
B) Aqua Regia
C) Hydrogen sulphide
D) Sulphate ion

2015

Q.17 **About 80% of ammonia is used for the production of**

A) Explosives
B) Fertilizers
C) Nylon
D) Polymers

Q.18 **Urea is the most widely used nitrogen fertilizer in Pakistan. Its composition Is**

A) NH_2CO
B) $N_2H_5CO_2$
C) $N_2H_4CO_2$
D) N_2H_4CO

Q.19 **During the manufacture of nitric acid, nitric oxide is oxidized to nitrogen dioxide. This reaction is given as:**

$$\mathbf{2NO_{(g)} + O_{2(g)} \rightleftharpoons 2NO_{2(g)} \quad \Delta H = -114\ kJ/mol}$$

According to Le Chatelier's Principle

A) Reaction must not be temperature dependent
B) Reaction must be carried out at room temperature
C) Reaction must be carried out at low temperature
D) Reaction must be carried out at high temperature

Q.20 **What is the percentage of nitrogen in NH_3NO_3?**

A) 65%
B) 35%
C) 20%
D) 58%

2016

Q.21 **The %age of nitrogen in ammonium nitrate is:**

A) 46%
B) 82%
C) 33%
D) 13%

Q.22 **Which one of the following is anhydride of sulphuric acid?**

A) Sulphur (II) oxide
B) Sulphur (VI) oxide
C) Iron pyrite
D) Sulphur (VI) oxide

Q.23 **During contact process of H_2SO_4 synthesis, the following reaction occurs:**

$$2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)} \qquad \Delta H = -96\ kJmol^{-1}$$

Which step is used to increase the yield of SO_3?

A) Temperature is raised to very high degree
B) SO_3 formed is removed very quickly
C) Both temperature and pressure are kept very low
D) An excess of air is used to drive the equilibrium to the right side

Q.24 **Synthesis of ammonia by Haber's process is a reversible reaction. What should be done to increase the yield of ammonia in the following reaction?**

$$N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)} \qquad \Delta H = -92\ kJmol^{-1}$$

A) Pressure should be decreased
B) Ammonia should remain in reaction mixture
C) Pressure should be increased
D) Concentration of nitrogen should be decreased

ANSWERS

Q.1	D	**Q.7**	A	**Q.13**	B	**Q.19**	C
Q.2	A	**Q.8**	C	**Q.14**	D	**Q.20**	B
Q.3	C	**Q.9**	A	**Q.15**	C	**Q.21**	C
Q.4	B	**Q.10**	B	**Q.16**	A	**Q.22**	D
Q.5	A	**Q.11**	D	**Q.17**	B	**Q.23**	D
Q.6	B	**Q.12**	D	**Q.18**	D	**Q.24**	C

ORGANIC CHEMISTRY

1C FUNDAMENTAL PRINCIPLES

2011

Q.1 **The compound with an atom, which has unshared pair of electrons is called:**

A) Nucleophile
B) Electrophile
C) Protophile
D) None of the above

Q.2 **1-chloropropane and 2-chlorpropane are isomers of each other, the type of isomerism in these two is called:**

A) Cis-trans isomerism
B) Chain isomerism
C) Position isomerism
D) Functional group isomerism

2012

Q.3 **Ethene on polymerization, gives the product polyethene. This reaction may be called as**

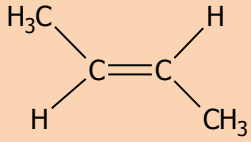
A) Addition
B) Condensation
C) Substitution
D) Pyrolysis

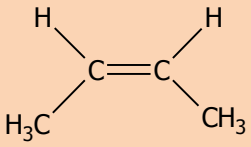
Q.4 **In the following, which one is free radical?**

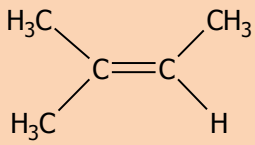
A) Cl^-
B) Cl^+
C) Cl_2
D) Cl^o

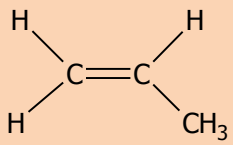
2013

Q.5 **The cis-isomerism is shown by:**

A) 

C) 

B) 

D) 

Q.6 **Select the nucleophile from the following examples:**

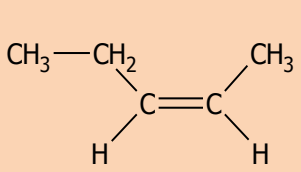
A) NO_2
B) NH_3
C) NO_2^+
D) N^+H_4

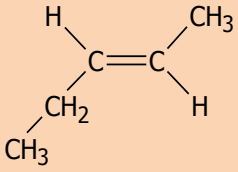
2014

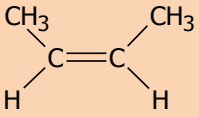
Q.7 **Which one of the following compound is a ketone?**

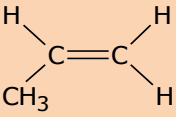
A) $CH_3 - O - CH_2 - CH_3$
B) $CH_3 - CO - CH_2 - CH_3$
C) $CH_3COCOOH$
D) $CH_3 - CH_2CHO$

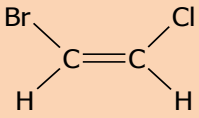
Q.8 **Which one of the following pair of compounds is cis and trans isomers of each other?**

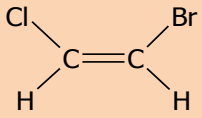
A) 

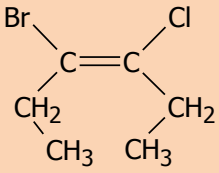


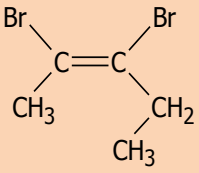
B) 



C) 

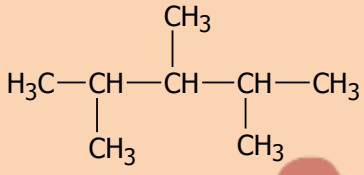


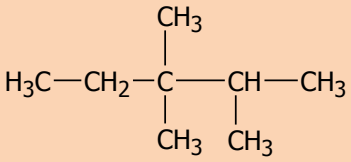
D) 

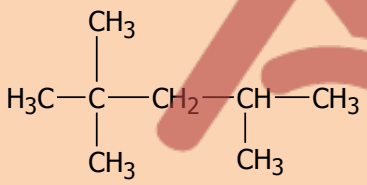


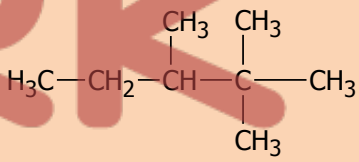
2015

Q.9 **The structural formula of 2,3,4 trimethylpentane is:**

A) 



B) 

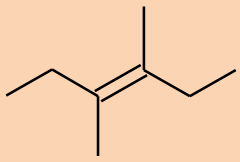
D) 

Q.10 **Which one of the following is a powerful electrophile used to attack on the electrons of benzene ring?**

A) $FeCl_2$
B) $FeCl_4^-$
C) Cl^+
D) C_{l2}

2016

Q.11 **Skeletal formula of an organic compound is given below:**



It is a hydrocarbon. IUPAC name of the compound is:

A) 3, 3-dimethyl-3-hexene
B) 3, 4-dimethyl-3-hexene
C) 3-hexene
D) 2,3-dimethyl-1-hexene

Q.12 **Which one of the following pairs can be cis-trans isomer to each other?**

A) $CHCl=CCl_2$ and $CH_2=CH_2$
B) $CHCl=CH_2$ and $CH_2=CHCl$
C) $CH_3–CH=CH–CH_3$ and $H_3C–CH=CH–CH_3$
D) $CH_3–CH_3$ and $CH_2=CH_2$

ANSWERS				
	Q.1	A	**Q.7**	B
	Q.2	C	**Q.8**	A
	Q.3	A	**Q.9**	A
	Q.4	D	**Q.10**	C
	Q.5	C	**Q.11**	B
	Q.6	B	**Q.12**	C

2C HYDROCARBONS

2011

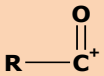
Q.1 **Benzene in the presence of $AlCl_3$ produces acetophenone when reacts with:**

A) Acetyl chloride
B) Acetic acid
C) Ethyl benzene
D) Ethanoic acid

Q.2 **The substitution of a '-H' by '-NO_2' group in benzene is called:**

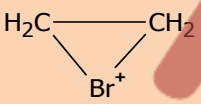
A) Nitration
B) Ammunolusis
C) Sulphonation
D) Reduction of benzene

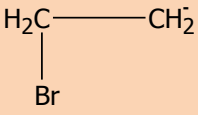
2012

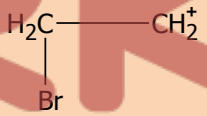
Q.3 **The introduction of**  **group in benzene is called**

A) Acylation
B) Carbonyl reduction
C) Alkylation
D) Formylation

Q.4 **In the reaction of ethane with bromine the intermediate formed is**

A) 

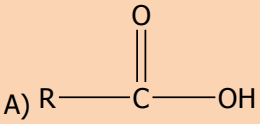
B) 

C) 

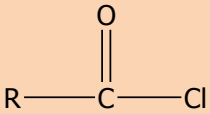
D) 

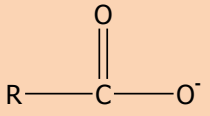
2013

Q.5 **The introduction of an alkyl group in benzene takes place in the presence of $AlCl_3$ and:**

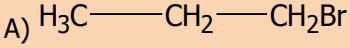
A) 

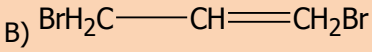
B) 

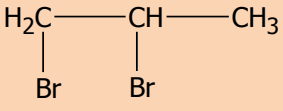
C) 

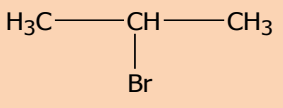
D) 

Q.6 **What is the product formed when propene reacts with HBr?**

A) 

B) 

C) 

D) 

2014

Q.7 **Addition of unsymmetrical reagent to an unsymmetrical alkene is governed by:**

A) Cannizzaro's Reaction
B) Kirchhoff Rule
C) Aldol Condensation
D) Markownikov's Rule

Q.8 **Ethylene glycols are used as**

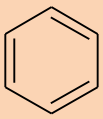
A) Anesthetic
B) Knocking agent
C) Freezing agent
D) Anti-freezing agent

2015

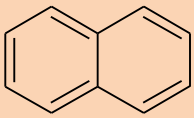
Q.9 **Order of reactivity of alkenes with hydrogen halide is:**

A) HBr > HI > HCl
B) HI > HBr > HF
C) HF > HI > HCl
D) HI > HBr > HCl

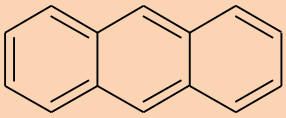
Q.10 **The given three hydrocarbons are**



Benzene



Naphthalene



Anthracene

A) Alicyclic hydrocarbons
B) Aromatic hydrocarbons
C) Acyclic Hydrocarbons
D) Heterocyclic hydrocarbons

2016

Q.11 **Which one of the following reactions shows combustion of a saturated hydrocarbon?**

A) $C_2H_4 + 3O_2 \longrightarrow 2CO_2 + 2H_2O$

B) $CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$

C) $CH_4 + \frac{1}{2} O_2 \xrightarrow[400°C,\ 200\ atm]{Cu} CH_3OH$

D) $C_2H_2 + \frac{5}{2} O_2 \longrightarrow 2CO_2 + H_2O$

Q.12 **The average bond energy of C-Br is:**

A) 228 $kJmol^{-1}$
B) 200 $kJmol^{-1}$
C) 250 $kJmol^{-1}$
D) 290 $kJmol^{-1}$

ANSWERS

Q.1	A	**Q.7**	D
Q.2	A	**Q.8**	D
Q.3	A	**Q.9**	D
Q.4	A	**Q.10**	B
Q.5	B	**Q.11**	B
Q.6	D	**Q.12**	D

3C ALKYL HALIDES

2011

Q.1 **When purely alcoholic solution of sodium/potassium hydroxide and halogenoalkanes are reacted an alkene is formed, what is the mechanism of reaction?**

A) Elimination
B) Dehydration
C) Debromination
D) Reduction of benzene

Q.2 **The organic compound carbon tetrachloride is used as:**

A) Lubricant
B) Solvent
C) Oxidant
D) Plastic

2012

Q.3 **The alkaline hydrolysis of bromoethane shown below gives alcohol as the product:**

The reagent and the condition used in this reaction may be:

A) H_2O at room temperature
B) Ethanol, heat
C) KOH in alcohol
D) Dilute $NaOH_{(aq)}$ warm

Q.4 **In substitution reactions, dihaloalkane or secondary halogenoalkane give / show:**

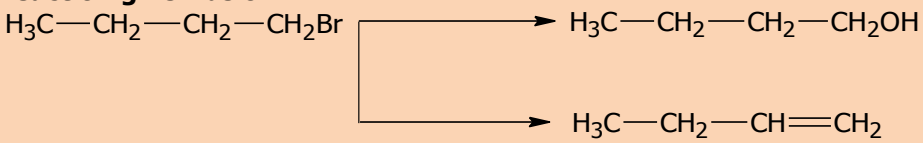
A) S_N1 Mechanism
B) S_N2 Mechanism
C) Both E_1 and E_2
D) Both S_N1 and S_N2

2013

Q.5 **The order of reactivity of alkyl halides towards nucleophile is:**

A) RI > RBr > RF > RCl
B) RI > RBr > RCl > RF
C) RF > RCl > RBr > RI
D) RF > RBr > RCl > RI

Q.6 **Consider the reaction given below:**



Which statement is true?

A) Reagent for I is KOH in alcohol
B) Reagent for II is KOH in aqueous medium
C) Reaction I is Debromination
D) Reaction II is elimination

2014

Q.7 **The halothane used in hospitals as an anesthetic is chemically**

A) 1-Bromo-1-chloro-2, 2, 2-trifluroethane
B) 2-Bromo-2-chloro-1, 1, 1-trifluroethane
C) 1, 1, 1-Triflouro-2-bromo-2-chloroethane
D) 2-Chloro-2-bromo-1, 1, 1-triflouromoethane

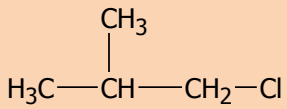
Q.8 **If halogenoalkanes are mixed with an excess of ethanoic ammonia and heated under pressure, amine are formed. Which amine is formed in the following reaction?**

$$CH_2CH_3Br + NH_3 \longrightarrow \text{Amine}$$

A) $CH_3—CH_2—NH—CH_2—CH_3$
B) $CH_3—CH_2—NH_2$
C) $CH_3—CH_2—CH_2—NH_2$
D) $H_2N—CH_2—CH_2—NH_2$

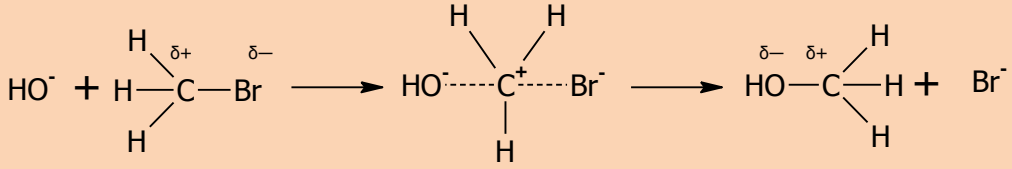
2015

Q.9 **The IUPAC name of the given compound is**



A) 1-Chloro-2-methylpropane
B) 1-Chloro-2-methylbutane
C) Isobutyl chloride
D) 2-Methyl-3-chloropropane

Q.10 **In the below reaction, the configuration of product is**



A) 100% same of the configuration of reactant
B) 50% retained
C) 50% inverted
D) 100% opposite from configuration of reactant

2016

Q.11 **Consider the reaction given below:**

$$CH_3CH_2Br \xrightarrow[\text{alcohol}]{KOH} H_2C{=}CH_2 + HBr$$

Mechanism followed by the reaction is:

A) E2
B) E1
C) S_N1
D) S_N2

Q.12 **Which one of the following is NOT a nucleophile:**

A) NH_2^-
B) H_2O
C) BF_3
D) CH_3^-

ANSWERS				
	Q.1	A	**Q.7**	B
	Q.2	B	**Q.8**	B
	Q.3	D	**Q.9**	A
	Q.4	D	**Q.10**	D
	Q.5	B	**Q.11**	A
	Q.6	D	**Q.12**	C

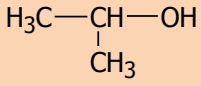
4C ALCOHOLS AND PHENOLS

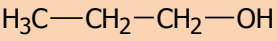
2011

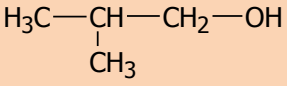
Q.1 **An alcohol is converted to an aldehyde with same number of carbon atoms as that of alcohol in the presence of $K_2Cr_2O_7/H_2SO_4$ the alcohol is:**

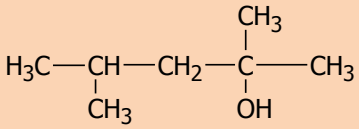
A) $CH_3Cl(CH)_2OH$
B) $CH_3CH_2CH_2OH$
C) $(CH_3)_3COH$
D) $(CH_3)_3CHOH$

Q.2 **Which of the following is a secondary alcohol?**

A) 

B) 

C) 

D) 

Q.3 **Which enzyme is involved in the fermentation of glucose:**

A) Zymase
B) Invertase
C) Urease
D) Diastase

Q.4 **Relative acidic strength of alcohol, phenol, water and carboxylic acid is:**

A) Carboxylic acid > Alcohol > Phenol > Water
B) Carboxylic acid > Phenol > Water > Alcohol
C) Phenol > Carboxylic acid > Alcohol > Water
D) Water > Alcohol > Phenol > Carboxylic acid

2012

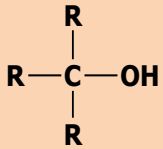
Q.5 **The dehydration of ethyl alcohol with concentrated H_2SO_4 at 140°C gives:**

A) Ethene
B) Diethyl ether
C) Alcohol
D) Carboxylic acid

Q.6 **Ethanol can be converted in to ethanoic acid by:**

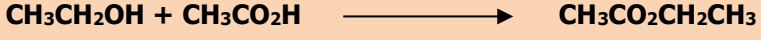
A) Oxidation
B) Fermentation
C) Hydration
D) Hydrogenation

Q.7 **The following structure is of:**



A) Secondary alcohol
B) Primary alcohol
C) Tertiary alcohol
D) Carboxylic acid

Q.8 **When ethanol is warmed with ethanoic acid in the presence of strong acid catalyst, an ester ethyl ethanoate is formed.**



During this reaction:

A) Alcohol is reduced
B) O–H bond in ethanoic acid is broken
C) O–H bond in ethanol is broken
D) Acid is oxidized

2013

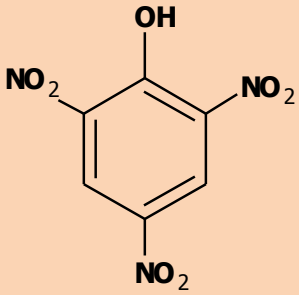
Q.9 **Consider the following reaction:**

$$C_2H_5OH + PCl_5 \longrightarrow ?$$

What product(s) may be formed?

A) C_2H_5Cl only
B) C_2H_5Cl and HCl
C) C_2H_5Cl, $POCl_3$ and HCl
D) C_2H_5Cl and $POCl_3$

Q.10

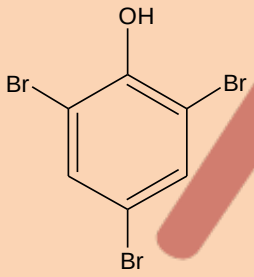


is named as:

A) Picric acid
B) Nitro phenol
C) Benzoic acid
D) Malonic acid

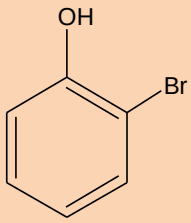
Q.11 **Aqueous phenol decolorizes bromine water to form a white precipitate. What is the structure of the white precipitate formed?**

A)

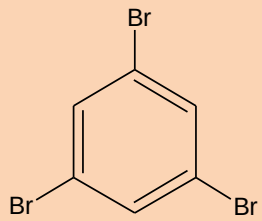


C)

B)



D)



Q.12 **The relative strength of carboxylic acid, water, ethanol and phenol has the following order of increasing acid strength:**

A) Carboxylic Acid > Phenol > Ethanol > Water
B) Carboxylic Acid > Phenol > Water > Ethanol
C) Phenol > Carboxylic Acid > Ethanol > Water
D) Water > Ethanol > Phenol > Carboxylic Acid

2014

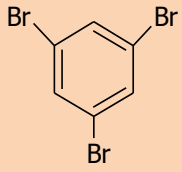
Q.13 **Primary, secondary and tertiary alcohols can be identified and distinguished by**

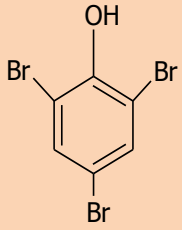
A) Lucas test
B) Iodoform test
C) Baeyer's test
D) Silver mirror test

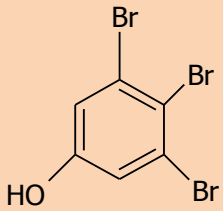
Q.14 **Which one of the following alcohol is indicated by formation of yellow crystals in Iodoform test?**

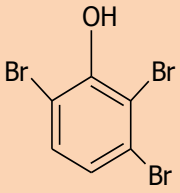
A) Methanol
B) Ethanol
C) Butanol
D) Propanol

Q.15 **The formula of 2, 4, 6-tribromo phenol is**

A) 

B) 

C) 

D) 

Q.16 **Which one of the following groups is indicated when HCl is formed by reaction of ethanol with phosphorous pentachloride?**

A) Amino group
B) Hydroxyl group
C) Halide group
D) Hydride group

2015

Q.17 **Which one of the following was used as one of the earliest antiseptic and disinfectant?**

A) Phenol
B) Ether
C) Ethanol
D) Methanol

Q.18 **Which one of the following is NOT able to denature the ethanol?**

A) Methanol
B) Lactic acid
C) Pyridine
D) Acetone

Q.19 **How will you distinguish between methanol and ethanol?**

A) By Lucas test
B) By silver mirror test
C) By oxidation
D) By Iodoform test

Q.20 **To produce absolute alcohol (100%) from rectified spirit (95.6% alcohol), the remaining 4.4% water must be removed by a drying agent such as**

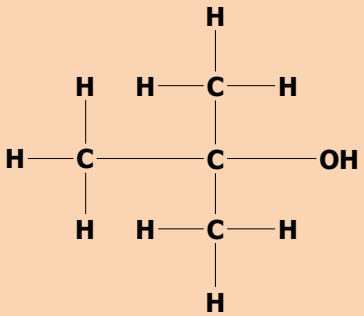
A) Calcium oxide
B) Calcium chloride
C) Calcium carbonate
D) Carbon monoxide

2016

Q.21 **Which one of the following is an appropriate indication of positive iodoform test?**

A) Formation of H_2O
B) Release of H_2 gas
C) Brick red precipitate
D) Yellow crystal

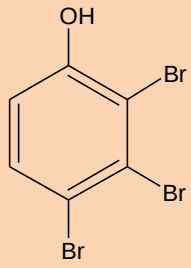
Q.22

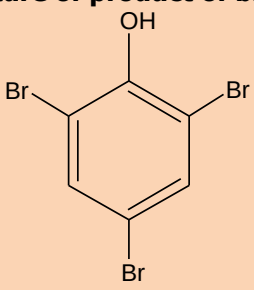


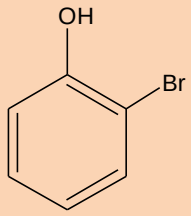
Which one of the following is the proper classification of above formula:

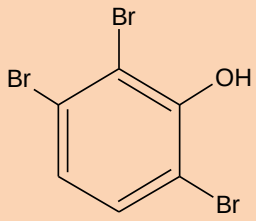
A) Primary
B) Secondary
C) Tertiary
D) Polyhydride

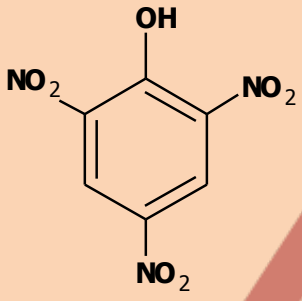
Q.23 **Which one of the following is an appropriate structure of product of bromination?**

A) 

C) 

B) 

D) 

Q.24 

Which one of the following is an appropriate name of above compound?

A) 1,3,6-Trinitrophenol
B) m-Nitrophenol
C) Tartaric acid
D) Picric acid

ANSWERS

Q.1	B	**Q.7**	A	**Q.13**	A	**Q.19**	D
Q.2	A	**Q.8**	C	**Q.14**	B	**Q.20**	A
Q.3	A	**Q.9**	B	**Q.15**	B	**Q.21**	D
Q.4	B	**Q.10**	A	**Q.16**	B	**Q.22**	C
Q.5	B	**Q.11**	A	**Q.17**	A	**Q.23**	C
Q.6	A	**Q.12**	B	**Q.18**	B	**Q.24**	D

5C ALDEHYDES AND KETONES

2011

Q.1 **Consider the following reaction:**

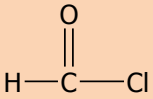
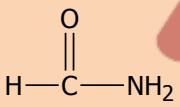
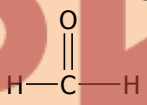
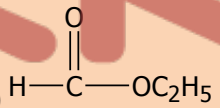
This reaction represents one of the following tests.

A) Fehling test
B) Benedict test
C) Ninhydrin test
D) Tollens test

Q.2 **In the below reaction, the nucleophile is:**

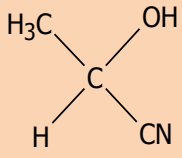
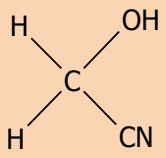
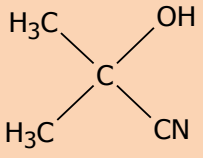
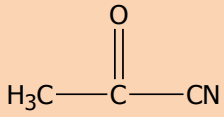
A) CN^-
B) HCl
C) Cl
D) OH

Q.3 **Which one of the following compound belongs to the homologous series of aldehydes?**

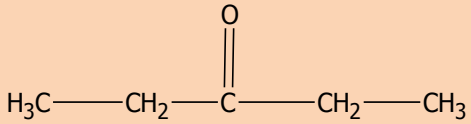
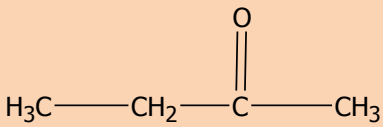
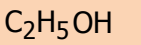
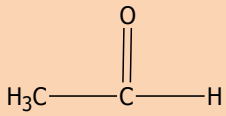
A) 
B) 
C) 
D) 

2012

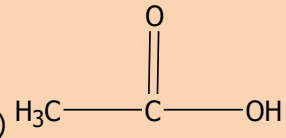
Q.4 **Formaldehyde reacts with HCN (NaCN + HCl) to give a compound:**

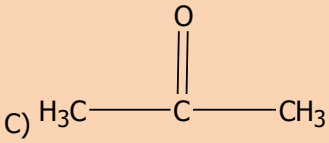
A) 
B) 
C) 
D) 

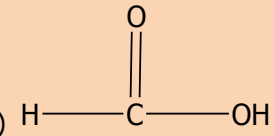
Q.5 **Iodoform test will not be positive with:**

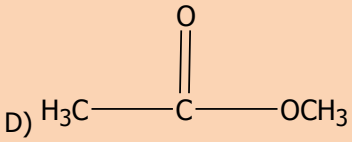
A) 
B) 
C) 
D) 

Q.6 **When $CH_3—CH_2—OH$ is oxidized in the presence of $K_2Cr_2O_7$ and H_2SO_4, the product formed is**

A) 

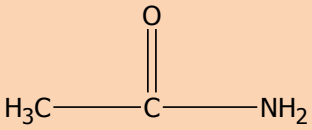
C) 

B) 

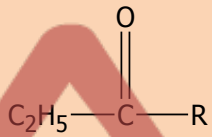
D) 

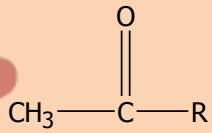
2013

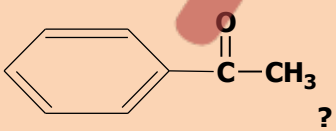
Q.7 **Which group gives a yellow precipitate of triiodo methane when warmed with alkaline aqueous iodine?**

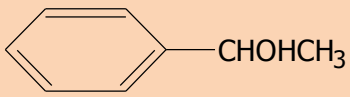
A) An amide group, 

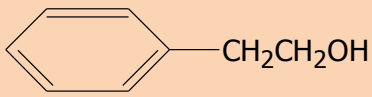
C) A primary Alcohol group as in Propanol
$CH_3-CH_2-CH_2-OH$

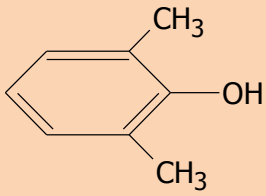
B) Ethyl Ketone group, 

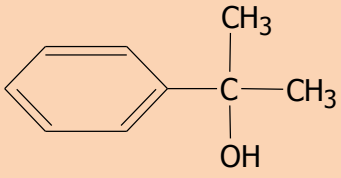
D) Methyl Ketone group, 

Q.8 **What is the structure of alcohol which on oxidation with acidified $Na_2Cr_2O_7$ gives**  **?**

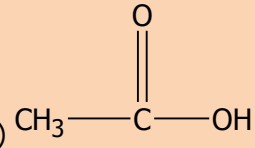
A) 

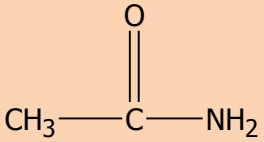
C) 

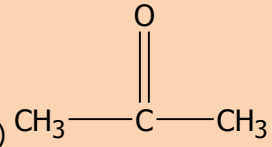
B) 

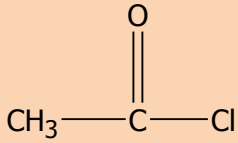
D) 

Q.9 **Which of the following is the structure of ketone?**

A) 

C) 

B) 

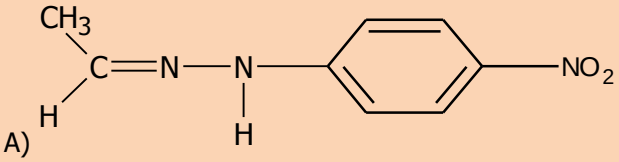
D) 

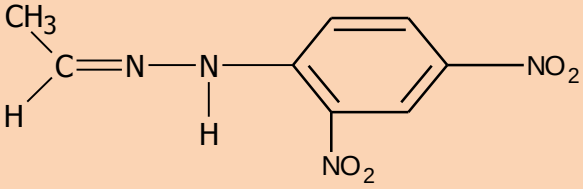
2014

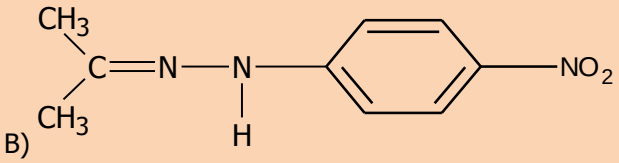
Q.10 **A student mixed ethyl alcohol with small amount of sodium dichromate and added it to the hot solution of dilute sulphuric acid. A vigorous reaction took place. He distilled the product formed immediately. What was the product?**

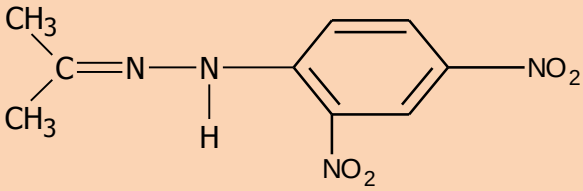
A) Acetone
B) Acetic acid
C) Dimethyl ether
D) Acetaldehyde

Q.11 **The structural formula of the product of reaction of acetone with 2, 4-dinitrophenyl hydrazine is:**

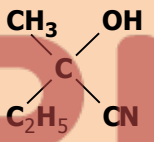
A)


C)


B)


D)


Q.12 **For the reaction:**



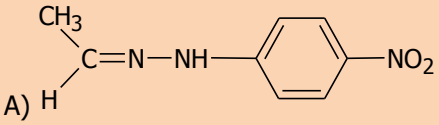
A) $C_2H_5COCH_3$
B) $C_2H_5CH(CH_3)OH$
C) CH_3COCH_3
D) $C_2H_5CH_2CHO$

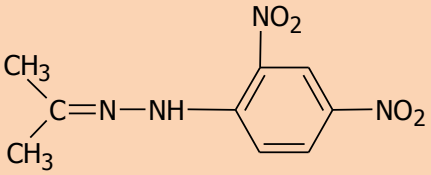
2015

Q.13 **Which one of the following is also called silver mirror test?**

A) Fehling's solution test
B) Iodoform test
C) Tollen's reagent
D) Benedict's solution tests

Q.14 **When acetaldehyde reacts with 2,4-dinitrophenylhydrazine (2,4-DNPH), which one of the following products is formed?**

A)


C)


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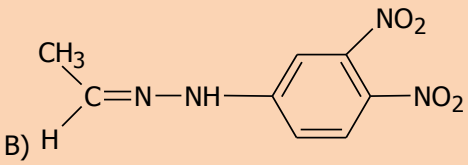
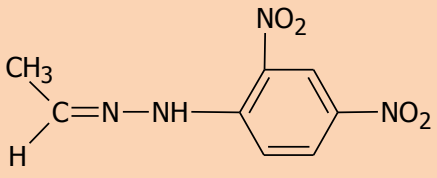


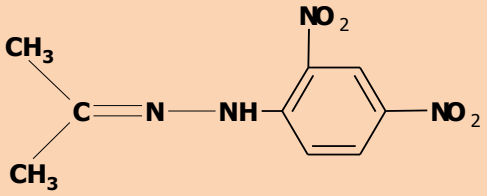
D)


Q.15 **Both aldehydes and ketones are planer to the neighborhoods of carbonyl (C=O) group. Which one of the following bonds is distorted towards the oxygen atoms?**

A) π-bond of C and O
B) Sigma bond of C and H
C) Sigma bond of C and O
D) Sigma bond of C and C

2016

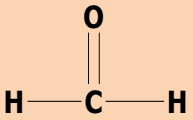
Q.16



It is the general formula of:

A) 2, 4-Dinitrophenyl hydrazine
B) 1, 3-Dinitrophenyl hydrazone
C) Phenyl hydrazone
D) 2, 4-Dinitrophenyl hydrazone

Q.17



Which one of the following is the IUPAC name of above given structure:

A) Propionaldehyde
B) Methanone
C) Acetaldehyde
D) Methanal

Q.18 **Which one of the following test is given by both aldehyde and ketone?**

A) Silver mirror test
B) Fehling's solution test
C) 2, 4 DNPH test
D) Benedict's solution test

ANSWERS

Q.1	D	**Q.7**	D	**Q.13**	C
Q.2	A	**Q.8**	A	**Q.14**	D
Q.3	C	**Q.9**	B	**Q.15**	A
Q.4	B	**Q.10**	D	**Q.16**	D
Q.5	A	**Q.11**	D	**Q.17**	D
Q.6	A	**Q.12**	A	**Q.18**	C

6C CARBOXYLIC ACIDS

2011

Q.1 **$CH_3COOH + PCl_5 \longrightarrow$?**
The products of the above reaction are:
A) $CH_3COI + POCl_3 + HCl$
B) $CH_3COI + POCl_2 + HCl$
C) $CH_3Cl + POCl_3 + HCl$
D) $CH_3COCl + POCl_3 + H_2$

Q.2 **$CH_3CN + HCl \longrightarrow$ A + B (in the presence of water)**
In the above reaction, A and B are:
A) Acetic acid and acid amide
B) Acetic acid and ammonia
C) Acetic acid and methyl chloride
D) Acetic acid and ammonium chloride

Q.3 **Consider the following reaction:**

$CH_3COOH + Mg$ (metal) $\longrightarrow$?

What product will form?
A) Magnesium formate
B) Magnesium acetate
C) Magnesium ion
D) Carboxylate ion

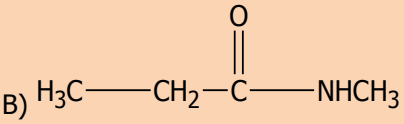
2012

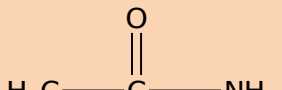
Q.4 **In the below reaction the nucleophile which attacks on the carbon atom of acid is:**

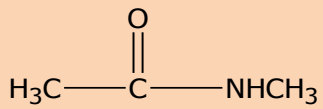
A) OH^-
B) P
C) Cl^-
D) H^-

Q.5 **When ethanol chloride reacts with methylamine, an amide is formed. What is the structure of the amide formed?**

A) 

B) 

C) 

D) 

Q.6 **Primary alcohols normally give us aldehydes when oxidized in the presence of $Na_2Cr_3O_7$, what the product will be, when the secondary alcohols are oxidized in same conditions?**
A) Alkenes
B) Alkynes
C) Alkyl halides
D) Ketones

2013

Q.7 **The formation of ester from acetic acid in presence of acid and ethanol is a:**
A) Nucleophilic substitution reaction
B) Nucleophilic addition reaction
C) Electrophilic substitution reaction
D) Electrophilic addition reaction

Q.8 **Methyl cyanides, on boiling with mineral acids or alkalis yield:**

A) Acetic acid
B) Formic acid
C) Propanoic acid
D) Butanoic acid

Q.9 $CH_3-\overset{\overset{O}{\|}}{C}-OH + NH_3 \xrightarrow{heat}$ **?**

The final products formed are:

A) $CH_3-\overset{\overset{O}{\|}}{C}-NH_2 + CO_2$

B) $CH_3-\overset{\overset{O}{\|}}{C}-NH_2 + H_2O$

C) $CH_3-\overset{\overset{O}{\|}}{C}-NH_2 + H_2$

D) $CH_3-\overset{\overset{O}{\|}}{C}-NH_2 + HCl$

2014

Q.10 **Ethyl butyrate and butyl butanoate are esters with the flavor of**

A) Pear
B) Banana
C) Pineapple
D) Apple

Q.11 **Acetamide is formed by dehydration of**

A) Oxalic acid
B) Ethanoic acid
C) Butanoic acid
D) Propanoic acid

Q.12 **Organic compounds 'X' and 'Y' both can react with Na-Metal to evolve hydrogen gas. If 'X' and 'Y' react with each other form an organic compound 'Z' which gives fruity smell. What type of compound 'X', 'Y' and 'Z' are?**

	X	Y	Z
A)	Alcohol	Ester	Acetic Acid
B)	Alcohol	Ester	Mineral Acid
C)	Alcohol	Acetic Acid	Ester
D)	Alcohol	Mineral Acid	Ester

2015

Q.13 **'K_a' values of few organic acids are given:**

Acid	K_a Value
CH_3COOH	1.85×10^{-5}
CCl_3COOH	2.3×10^{-2}
$CHCl_2COOH$	5.0×10^{-3}
$CH_2ClCOOH$	1.3×10^{-3}

The order of acid strength is:

A) $CCl_3COOH > CHCl_2COOH > CH_2ClCOOH > CH_3COOH$
B) $CH_3COOH > CHCl_2COOH > CCl_3COOH > CH_2ClCOOH$
C) $CHCl_2COOH > CH_3COOH > CCl_3COOH > CH_2ClCOOH$
D) $CCl_3COOH > CH_3COOH > CHCl_2COOH > CH_2ClCOOH$

Q.14 **An organic acid 'z' reacts separately with sodium bicarbonate, sodium hydroxide and sodium carbonate. Which one of the following represent the structure of 'z'?**

A) $HCOOC_2H_5$
B) $CH_3—CH=CH_2$
C) CH_3CH_2OH
D) $H_3C—CH_2—COOH$

Q.15 **Carboxylic acids are rather hard to reduce, which powerful reducing agent can be used to convert them to the corresponding primary alcohol:**

A) $H_2SO_4/HgSO_4$
B) V_2O_5
C) $LiAlH_4$
D) $K_2Cr_2O_7/H_2SO_4$

2016

Q.16 **$CH_3COOH + CH_3CH_2OH \rightleftharpoons CH_3COOC_2H_5 + H_2O$**
Which one of the following will act as a catalyst in above reaction?

A) HNO_3
B) H_2SO_4
C) Acidified potassium dichromate
D) $SOCl_2$

Q.17 **$CH_3COOH + PCl_5 \longrightarrow$?**
Which one of the following options shows the products of above reaction?

A) $POCl_2 + CH_3COCl_2 + HCl$
B) $POCl_3 + CH_3COCl_2 + H_2$
C) $CH_3COCl + POCl_2 + HCl$
D) $POCl_3 + CH_3COCl + HCl$

Q.18 **Which one of the following reaction of carboxylic acid is reversible?**

A) Esterification
B) Salt formation
C) Reaction with PCl_5
D) Reaction with $SOCl_2$

ANSWERS						
	Q.1	A	**Q.7**	A	**Q.13**	A
	Q.2	D	**Q.8**	A	**Q.14**	D
	Q.3	B	**Q.9**	B	**Q.15**	C
	Q.4	C	**Q.10**	C	**Q.16**	B
	Q.5	D	**Q.11**	B	**Q.17**	D
	Q.6	D	**Q.12**	C	**Q.18**	A

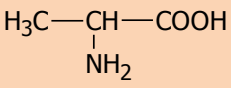
7C AMINO ACIDS

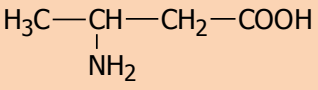
2011

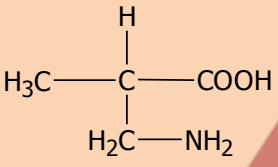
Q.1 **The —NH—CO is called:**

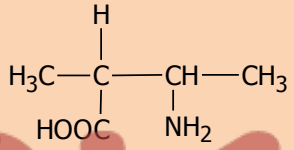
A) Amide group
B) Amino group
C) Protein linkage
D) Peptide linkage

Q.2 **Which one of the following is an alpha amino acid?**

A) 

C) 

B) 

D) 

Q.3 **Which of the following has an amino R-group?**

A) Lysine
B) Proline
C) Valine
D) Alanine

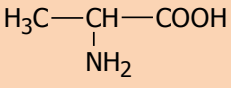
Q.4 **At intermediate value of pH, amino acids form Zwitter ions containing:**

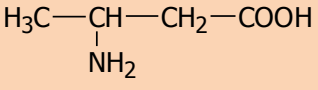
A) $-N^+H_3$ and $COO-$
B) $-NH_3$ and $COO-$
C) $-N^+H_3$ and $COOH$
D) $-NH_3$ and $COOH$

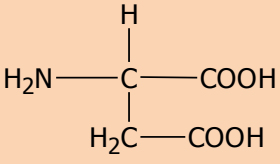
Q.5 **A polymer in which the number of amino acid residue is greater than 100 or molecular mass is greater than 1000, is known as:**

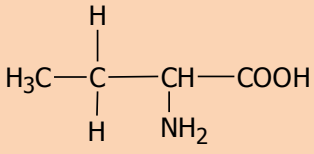
A) Protein
B) Polypeptide
C) Dipeptide
D) Tripeptide

Q.6 **Aspartic acid is an acidic amino acid, which has chemical formula:**

A) 

C) 

B) 

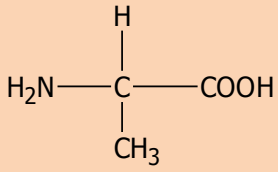
D) 

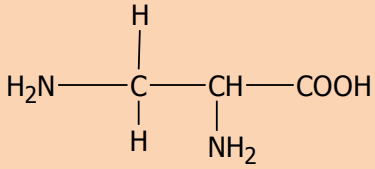
2012

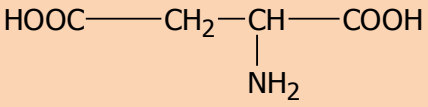
Q.7 **Organic compound containing both amine and carboxyl group is known as**

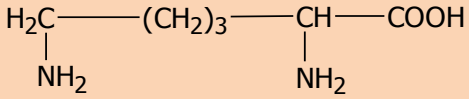
A) Amino acid
B) Fatty acid
C) Saccharide
D) Amide

Q.8 **Alanine is an amino acid which shows neutral effect on litmus paper, the formula of alanine may be**

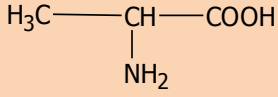
A) 

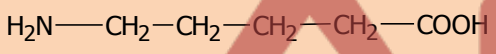
B) 

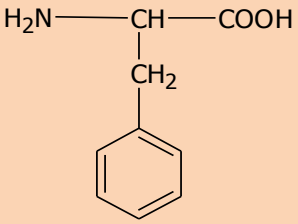
C) 

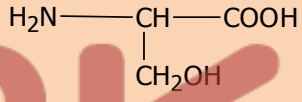
D) 

Q.9 **Which of the following structures is not an alpha amino acid?**

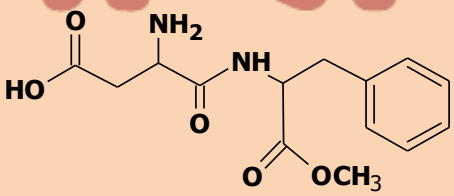
A) 

B) 

C) 

D) 

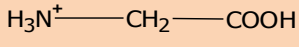
Q.10 **The skeletal formula of dipeptide formed between aspartic acid and phenylalanine is given below:**

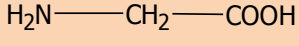


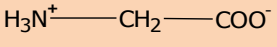
How many functional groups are present in its formula?

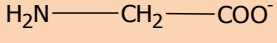
A) 1
B) 2
C) 4
D) 3

Q.11 **In basic conditions, amino acid exists in which of the following forms?**

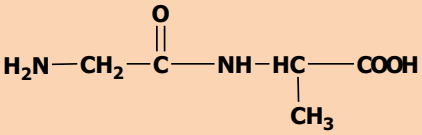
A) 

B) 

C) 

D) 

Q.12 **Structure of dipeptide is**



This is called:

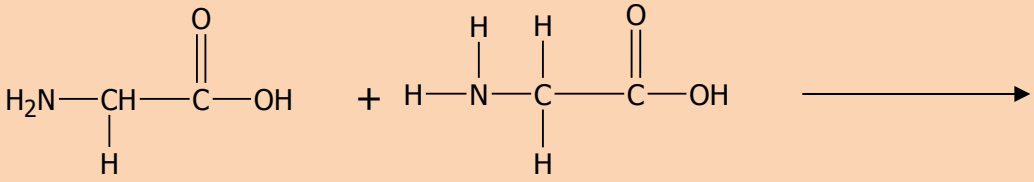
A) Glycyl glycine
C) Glycyl alanine
C) Alaninyl alanine
D) Alaninyl glycine

2013

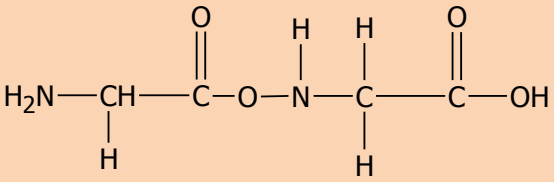
Q.13 **The amino acids which largely exist in dipolar ionic form are:**

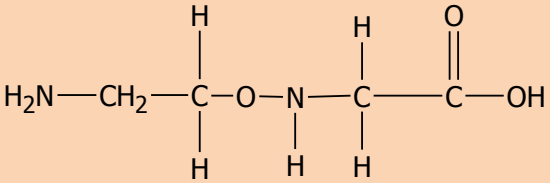
A) Acidic amino acids
B) Basic amino acids
C) Beta amino acids
D) Alpha amino acids

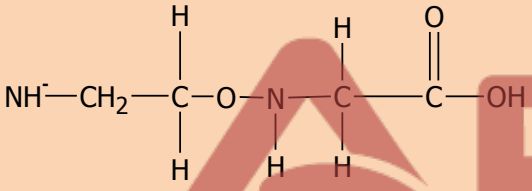
Q.14 **The reaction:**

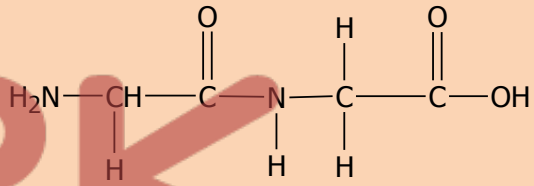


Gives a product called dipeptide molecule represented by:

A)


C)


B)


D)


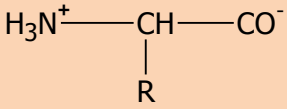
Q.15 **Two or more amino acids condensed to form protein by a peptide linkage which is resent between two atoms:**

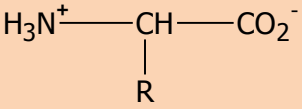
A) C and C
B) O and C
C) C and N
D) C and H

Q.16 **α-amino acids are compounds having carboxylic acid as well as amino functional groups attached to:**

A) Any H-atom in the molecule
B) Same carbon atom
C) Alternate carbon atoms
D) Neighboring carbon atoms

Q.17 **The formula of 'Zwitter ion' is represented by:**

A)


C)


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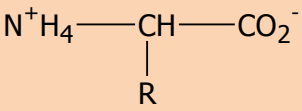

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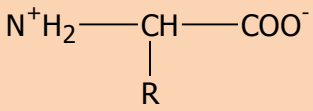
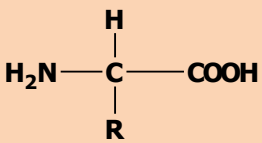


Q.18 **What is the name of amino acid,**



where 'R' is CH_3 group?

A) Glycine
B) Lysine
C) Aspartic acid
D) Alanine

2014

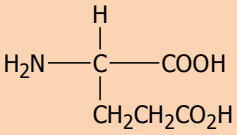
Q.19 **The amino acids which are not prepared in human body are called**

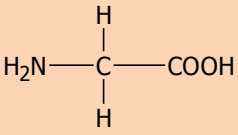
A) Essential amino acids
B) Non-essential amino acids
C) Alpha amino acids
D) Beta amino acids

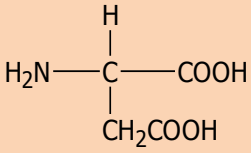
Q.20 **Indicate the cyclic amino acid from the following:**

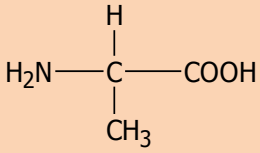
A) Cysteine
B) Serine
C) Haloamine
D) Proline

Q.21 **Which one of the following is Glutamic Acid?**

A) 

C) 

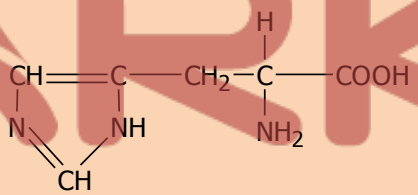
B) 

D) 

Q.22 **At low pH or in acidic condition amino acid exists as**

A) Anion
B) Cation
C) Zwitter ion
D) Neutral specie

Q.23 **The structure shown below represents:**



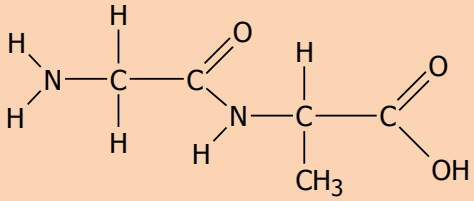
A) Proline
B) Histidine
C) Glycine
D) Lysine

Q.24 **Which one of the following reagent is used for identification of amino acids?**

A) Fehling's solution
B) Benedict's solution
C) Ninhydrin
D) Copper (II) Sulphate

2015

Q.25



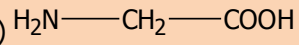
This structure is

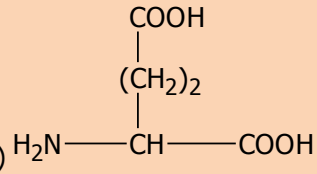
A) Gly-Ala (dipeptide)
B) Asp-Gly (dipeptide)
C) Gly-Val (dipeptide)
D) Asp-Val (dipeptide)

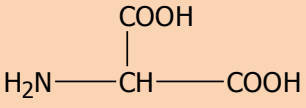
Q.26 **Which one of the following amino acids is basic in nature?**

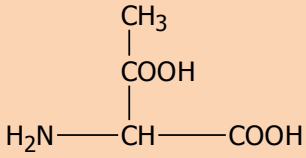
A) Glycine
B) Alanine
C) Lysine
D) Glutamic acid

Q.27 **Which one of the following structures shows the correct formula of glutamic acid?**

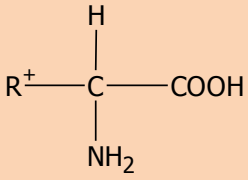
A) 

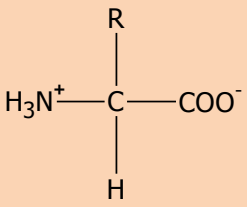
B) 

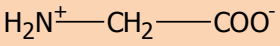
C) 

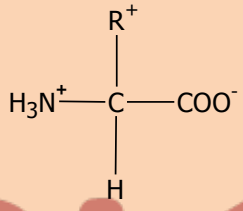
D) 

Q.28 **Select the correct Zwitter ionic structures of an amino acid.**

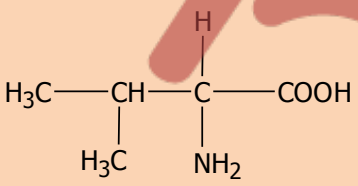
A) 

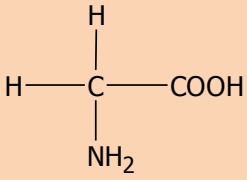
B) 

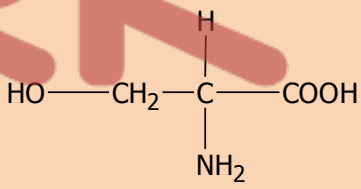
C) 

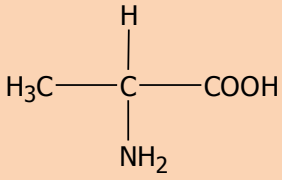
D) 

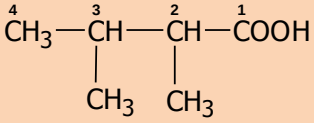
Q.29 **The structural formula for alanine is:**

A) 

B) 

C) 

D) 

Q.30 **In**  **which one is α-carbon atom?**

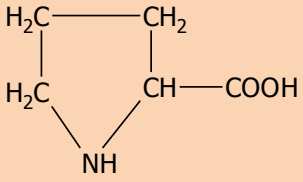
A) 1
B) 3
C) 2
D) 4

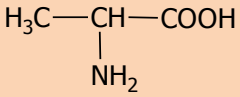
2016

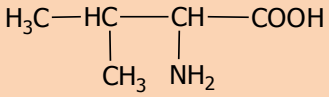
Q.31 **In the formation of Zwitter ion which one of the following donates the proton?**

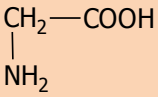
A) COOH
B) NH_2
C) CH_2COO^-
D) OH^-

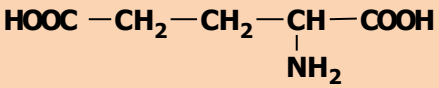
Q.32 **Which one of the following is structural formula of proline?**

A) 

C) 

B) 

D) 

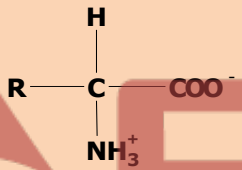
Q.33 

What is the name of above given structural formula?

A) Aspartic Acid
B) Asparagine
C) Adipic Acid
D) Glutamic Acid

Q.34 **Which one of the following is simplest amino acid?**

A) Lysine
B) Leucine
C) Alanine
D) Glycine

Q.35 

Select the best option indicating the name of the above structure:

A) Cation
B) Neutral amino acid
C) Internal salt
D) Anion

Q.36 **When acid is added to an amino acid, which one of the following will act as a base?**

A) NH_3^+
B) COO^-
C) H^+
D) R group

ANSWERS								
	Q.1	D	**Q.10**	C	**Q.19**	A	**Q.28**	B
	Q.2	A	**Q.11**	D	**Q.20**	D	**Q.29**	D
	Q.3	A	**Q.12**	B	**Q.21**	A	**Q.30**	C
	Q.4	A	**Q.13**	D	**Q.22**	B	**Q.31**	A
	Q.5	A	**Q.14**	A	**Q.23**	B	**Q.32**	A
	Q.6	B	**Q.15**	C	**Q.24**	C	**Q.33**	A
	Q.7	A	**Q.16**	B	**Q.25**	A	**Q.34**	D
	Q.8	A	**Q.17**	A	**Q.26**	C	**Q.35**	C
	Q.9	B	**Q.18**	D	**Q.27**	B	**Q.36**	B

8C MACROMOLECULES

2011

Q.1 **When hexane dioic acid is heated with hexamethylene diamine, the compound formed is:**
A) Polypeptide
B) Addition polymer
C) Ester
D) Nylon 6,6

Q.2 **Glucose and fructose are common examples of:**
A) Pentoses
B) Hexoses
C) Heptoses
D) Butoses

Q.3 **The reaction between fats and caustic soda is called:**
A) Hydrogenolysis
B) Fermentation
C) Carboxylation
D) Saponification

Q.4 **Macromolecules are described as large molecules built up from small repeating units known as:**
A) Monomers
B) Isomers
C) Metameres
D) Tautomer

Q.5 **Polyvinyl chloride is an example of:**
A) Addition polymer
B) Condensation polymer
C) Biopolymer
D) Thermosetting polymer

Q.6 **Terylene, a polyester is an example of:**
A) Biopolymer
B) Lipids
C) Condensation polymer
D) Addition polymer

2012

Q.7 **The principle energy storage carbohydrate in animal's is**
A) Glucose
B) Starch
C) Protein
D) Glycogen

Q.8 **Starch is a polymer of**
A) β–D–glucose
B) α– –glucose
C) γ–D–glucose
D) α–L–glucose

Q.9 **The reaction between fats and caustic soda is called**
A) Hydrogenolysis
B) Fermentation
C) Esterification
D) Saponification

Q.10 **Adipic acid and hexamethylene diamine both of which have _____ carbon atoms:**
A) Seven
B) Eight
C) Six
D) Four

Q.11 **Lactose is a sugar present in milk. It is an example of**
A) Disaccharides
B) Monosaccharides
C) Polysaccharides
D) Starch

Q.12 **Macromolecules are described as large molecules built up from small repeating units called:**
A) Monomers
B) Isomers
C) Metamers
D) Tautomers

2013

Q.13 **Polyvinyl acetate (PVA) is colourless and non-toxic resin used as an adhesive and as a binder for making:**
A) Toys
B) Gramophone recorders
C) Compact discs
D) Emulsion pains

Q.14 **Both ribose and deoxyribose are monosaccharides containing _____ carbon atoms.**
A) Four
B) Six
C) Five
D) Seven

Q.15 **The increased quantities of cholesterol in blood make plaque like deposits in the arteries causing:**
A) Cholera
B) Down's syndrome
C) Heart attack
D) Phenylketonuria

Q.16 **Polyvinyl chloride is an example of:**
A) Condensation polymer
B) Addition polymer
C) Biopolymer
D) Thermosetting polymer

Q.17 **Collagen is a fibrous protein present most abundantly in:**
A) Hair
B) Nail
C) Tendons
D) Arteries

Q.18 **Animals store glucose in the form of glycogen in:**
A) Stomach
B) Mouth
C) Liver and muscles
D) Small intestine

2014

Q.19 **Which one of the following is an example of condensation polymer?**
A) Polyvinylchloride
B) Polystyrene
C) Polyethene
D) Polyamide

Q.20 **Among the most common disaccharides, which one of the followings is present in the milk?**
A) Sucrose
B) Maltose
C) Fructose
D) Lactose

Q.21 **Fats are a type of lipid called glycerides. They are esters of long chain carboxylic acids:**
A) Propene-1, 2, 3-triol
B) Propane-1, 2, 3-triol
C) Propene-1, 2, 3-diol
D) Propane-1, 2, 3-diol

Q.22 **Which one of the following base is NOT present in RNA?**
A) Cytosine
B) Adenine
C) Thymine
D) Guanine

Q.23 **Collagen proteins are present in _____ throughout the body**
A) Muscle
B) Red blood cells
C) Tendons
D) Blood plasma

Q.24 **Polystyrene is an addition polymer. Which one of the following structures represents the monomer of polystyrene?**
A) $CH_2{=}CH_2$
B) $CH_2{=}CH{-}CH_3$
C) $CH_2{=}CH{-}Cl$
D) $CH_2{=}CH{-}C_6H_5$

2015

Q.25 **The specific substances (metabolite) that fits on the enzyme surface and is converted to products is called**

A) Co-factor
B) Prosthetic group
C) Isoenzyme
D) Substrate

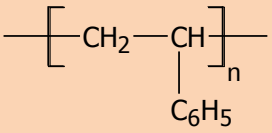
Q.26 **Polymide is formed due to the condensation od hexane-dioic acid with**

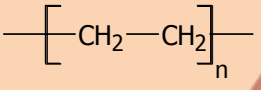
A) Hexane-1,5-diamine
B) Hexane-1,6-diamine
C) Hexane-1,4-diamine
D) Hexane-2,5-diamine

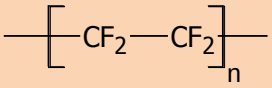
Q.27 **Haemoglobin is a**

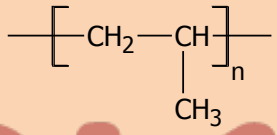
A) Genetic protein
B) Building protein
C) Transport protein
D) Structural protein

Q.28 **Which one of the following polymer is polystyrene?**

A) 

B) 

C) 

D) 

Q.29 **Out of these which nitrogen base is NOT present in DNA?**

A) Adenine
B) Guanine
C) Uracil
D) Thymine

Q.30 **Which one of the following is an example of co-polymer?**

A) Polyamide
B) Polystyrene
C) Polyvinyl acetate
D) Polyvinyl chloride

2016

Q.31 **Which one of the following polymer is called as Nylon 6,6?**

A) Polyester
B) Polyvinyl chloride
C) Polyamide
D) Polyvinyl acetate

Q.32 **Which one of the following is an exact composition of a carbohydrates?**

A) Carbon and Hydrogen
B) Carbon and Oxygen
C) Carbon, Hydrogen and Oxygen
D) Hydrogen and Oxygen

Q.33 **Which one of the following nitrogen base is NOT present in DNA?**

A) Adenine
B) Guanine
C) Uracil
D) Cytosine

Q.34 **In the woody parts of trees, the %age of cellulose is:**

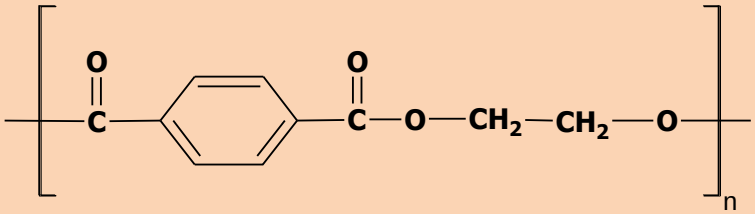
A) 50%
B) 10%
C) 30%
D) 100%

Q.35 **In laboratory experiment an unknown compound was added in test tube containing iodine, the colour became intense blue. What could be the unknown compound?**

A) Cellulose
C) Ribose

B) Raffinose
D) Starch

Q.36



Indicate the name of above given structure.

A) Nylon 6,6
B) Adipic Acid
C) PVA
D) Polyester

ANSWERS

Q.1	D	**Q.10**	C	**Q.19**	D	**Q.28**	A
Q.2	B	**Q.11**	A	**Q.20**	D	**Q.29**	C
Q.3	D	**Q.12**	A	**Q.21**	B	**Q.30**	A
Q.4	A	**Q.13**	D	**Q.22**	C	**Q.31**	C
Q.5	A	**Q.14**	C	**Q.23**	C	**Q.32**	C
Q.6	C	**Q.15**	C	**Q.24**	D	**Q.33**	C
Q.7	D	**Q.16**	B	**Q.25**	D	**Q.34**	D
Q.8	B	**Q.17**	C	**Q.26**	B	**Q.35**	D
Q.9	D	**Q.18**	C	**Q.27**	C	**Q.36**	C

9C ENVIRONMENTAL CHEMISTRY

2011

Q.1 **The suspected liver carcinogen which also has negative reproduction and developmental effect on humans is:**

A) Iodoform
B) Bromoform
C) Tropoform
D) Chloroform

Q.2 **Peroxyacetyl nitrate is an irritant to human beings and it effects:**

A) Nose
B) Stomach
C) Ears
D) Eyes

2012

Q.3 **The increase in concentration of oxidizing agents in smog like H_2O_2, HNO_3, PAN and ozone in the air is called**

A) Carbonated smog
B) Nitrated smog
C) Photochemical smog
D) Sulphonated smog

Q.4 **Which is the metal, whose elevated concentration is harmful for fish as it clogs the gills thus causing suffocation?**

A) Sodium
B) Lead
C) Zinc
D) Aluminium

2013

Q.5 **Aerobic decomposition of organic matter i.e. glucose by bacteria in water sediments produces:**

A) Propene
B) Ethane
C) Methane
D) Butane

Q.6 **The yellowish-brown color in photochemical smog is due to the presence of:**

A) Sulphur dioxide
B) Carbon monoxide
C) Carbon dioxide
D) Nitrogen dioxide

2014

Q.7 **_____ is an eye irritant.**

A) Peroxyacetyl nitrate
B) Peroxyacetyl nitrite
C) Peroxymethoxy aniline
D) Peroxyacetyl aniline

Q.8 **Which one of the following pollutants can cause death of a person by binding with haemoglobin of red blood cells?**

A) Chlorofluorocarbons
B) Oxides of Sulphur
C) Carbon monoxide
D) Oxides of nitrogen

2015

Q.9 **The biggest source of acid rain is the oxide of**

A) N
B) S
C) O
D) C

Q.10 **Burning of which one of the following waste is considered as useful industrial fuel or to produce electricity**

A) Metals
B) Grass
C) Paper
D) Plastic

2016

Q.11 **Ozone concentration is measured in:**

A) Debye units
B) Dupont units
C) Debacle units
D) Dobson units

Q.12 **The gas which is mainly produced in landfills from the waste is:**

A) CH_4
B) CO_2
C) SO_2
D) Cl_2

ANSWERS

Q.1	D	**Q.7**	A
Q.2	D	**Q.8**	C
Q.3	C	**Q.9**	B
Q.4	D	**Q.10**	D
Q.5	C	**Q.11**	D
Q.6	D	**Q.12**	A