BRILLIANT PUBLIC SCHOOL , SITAMARHI

(Affiliated up to +2 level to C.B.S.E., New Delhi)

Affiliation No. - 330419

XI-Chemistry Worksheet

Session : 2014-15

Office: Rajopatti, Dumra Road, Sitamarhi(Bihar), Pin-843301
Website: www.brilliantpublicschool.com; E-mail: brilliantpublic@yahoo.com
Ph.06226-252314, Mobile: 9431636758, 9931610902

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#1 : Some Basic Concepts of Chemistry -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What is the mass of 3 gram atoms of calcium?

(1 Mark)

Q2 -Calculate the mass of $CaCO_3$ which is required to react with 25 ml of 0.75 M HCl.

(5 Marks)

Q3 - During preparation of ammonia by Haber's process 30 L of H2 and 30 L of N2 are mixed. The yield of NH3was 50%. Find the composition of gaseous mixtures.

(3 Marks)

Q4 -Potassium bromide (KBr) contains 32.9% potassium by mass. If 6.40 g of Br_2 is made to react with 3.60 g of potassium, find the actual mass of potassium which reacts with bromine.

(2 Marks)

Q5 - One atom of an element weighs 1.8×10^{-22} g . What is the atomic mass of element?

(1 Mark)

Q6 -Chlorophyll contains 2.7% of Magnesium by mass.The number of magnesium atoms present in 4.00g of chlorophyll is

(3 Marks)

Q7 - How much water is required to dilute 10 ml of 10 N hydrochloric acid to make it exactly decinormal?

(2 Marks)

Q8 - Find the molarity of solution prepared by dissolving 4g of NaOH in 3L of solution.

(2 Marks)

Q9 - How many molecules are present in 1 kg mole?

(1 Mark)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#1 : Some Basic Concepts of Chemistry -02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Express the results of following calculations to appropriate number of significant digits

816 + 0.02456 + 215.36

(2 Marks)

Q2 - Calculate the molar volume of water at 273 K (density of water = 1.00 g/cm3).

(1 Mark)

Q3 -How many moles of methane are required to produce 22 g CO?

(5 Marks)

Q4 - A solution is prepared by dissolving 5.85g of NaCl in 90g of H2O. Find mole fraction of NaCl and H_2O.

(3 Marks)

Q5 - Find the molarity of solution prepared by dissolving 7.1g of Na_2SO_4 in 100ml of aqueous solution.

(3 Marks)

Q6 - What is one atomic mass unit (amu) or Unified mass (U)?

(1 Mark)

Q7 - Find the number of significant figures in 3.248×10^{-3}.

(1 Mark)

Q8 - Write the S.I. unit of molality.

(1 Mark)

Q9 - What is the value of Avogadro constant?

(1 Mark)

Q10 - Empirical formula of an organic compound is $C_2H_3O_2$. Its molecular weight is 118. Write its molecular formula.

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#1 : Some Basic Concepts of Chemistry -03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 -Express the following in SI units-

(i) Speed of ball 90 miles per hour

(ii) Carbon - carbon bond length 1.33 Å

(2 Marks)

Q2 - Solve the following and state the answer in proper number of significant digits.

108/8.2

(2 Marks)

Q3 - On complete combustion 0.858 g of compound (x) gives 2.63 g of CO_2 and 1.27g of H_2O. Calculate the empirical formula of the compound.

(5 Marks)

Q4 -Density of mercury is 13.6 g/cc. Its density in Kg m^{-3} is

(1 Mark)

Q5 - Solve the following and express the answer in standard exponential form $(2.0 \times 10^{13}) + (1.5 \times 10^{14})$.

(1 Mark)

Q6 - (i) How many moles of sulphur will be produced when 2 moles of H2S reacts with 11.2L of SO2 at NTP.

(ii) Name the limiting reagent in the above reaction.

(2 Marks)

Q7 - Define limiting reagent.

(1 Mark)

Q8 -A car consumes 30 moles per gallon of gasoline and drives 12000 miles per year. Calculate the amount of oxygen required to run the car for one year.

[Assume that octane (C_8H_{18}) is the main component of the gasoline.]

(3 Marks)

Q9 -The mass of an empty beaker is 50.55g. The mass of a same beaker when filled completely with a liquid is 150.457g. If the volume of the empty glass is 100.2ml, calculate the density of the liquid. Express the answer in appropriate significant figures.

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#2 : Structure of Atom-01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What were the discrepancies observed in Bohr's model?

(5 Marks)

Q2 - How many protons and neutron are in the following nuclei?

$^{31}_{15}P$, $^{37}_{17}Cl$, $^{40}_{20}Ca$

(3 Marks)

Q3 - Which of the following orbitals are not possible -

2d, 4f, 6d, 3g

(2 Marks)

Q4 - If the largest value of m for an electron is +2, then the electron may be present in what type of sub shell?

(2 Marks)

Q5 - Point out the differences and similarities in the orbitals represented by following sets of quantum numbers-

	n	l	m
(i)	3	2	+2
(ii)	3	2	–1

(2 Marks)

Q6 - The work function of a metal is 4.2 eV. If radiations of 2000 A^0 fall on the metal , then find the kinetic energy of fastest photon electron.

(3 Marks)

Q7 - What is the value of Plank's constant in S.I. Units?

(1 Mark)

Q8 - When a ball is hit with a hockey stick by a player, it does not make a wave. Why?

(1 Mark)

Q9 - Which series are produced when electrons from the outer orbits jumps to 3rd orbit?

(1 Mark)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#2 : Structure of Atom-02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 -Find the wavelength of radiation emitted when an electron from infinity falls to stationary state 1 in a hydrogen atom. ($RH = 1.09 \times 10^7\ m^{-1}$)

(3 Marks)

Q2 - Explain Hund's rule with the help of example of nitrogen.

(3 Marks)

Q3 - Derive de Broglie's relationship. What is its significance?

(5 Marks)

Q4 - The frequency of a radiation is 6×10^{14} cycles / sec. Find out the wavelength of radiation in nanometer.

(2 Marks)

Q5 - An isotope of atomic mass 27 has 14 neutrons in the nucleus. What is the atomic number, name and symbol of element.

(2 Marks)

Q6 - Write the designation for orbitals with following quantum numbers-

(a) $n = 3,\ l = 1$ (b) $n = 5, l = 2$

(2 Marks)

Q7 - Who discovered neutrons?

(1 Mark)

Q8 - Which element does not have any neutron in it?

(1 Mark)

Q9 - Give two examples from everyday life where cathode ray tubes are used?

(1 Mark)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#2 : Structure of Atom-03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - The uncertainty in momentum of an electron is 1.0 x 10^{-5} Kg ms-1 . What is the uncertainty in its position?

(2 Marks)

Q2 - Find the de Broglie wavelength in Å of a particle with mass 1g and velocity 100m/s.

(2 Marks)

Q3 - Find wavelength of photon having energy 3.03 x 10^{-19} J.

(2 Marks)

Q4 - What will be the uncertainty in velocity of an electron (mass of electron = 9.1 x 10-28 g) moving with a velocity of 3.0 x 104 ms-1 accurate up to 0.011%?

Q5 -Write the electronic configuration of following atoms/ions -

F^-, Cr, Mg^{2+}, O^-, Ca

(Atomic number of F = 9, Cr = 24, Mg = 12 ,O = 8, Ca = 20)

(5 Marks)

Q6 - Which of the following species are isoelectronic?

Na^+, O^{2-}, F^-, Ca^{2+}, K^+

(2 Marks)

Q7 - (i) Write values of n and l for 4f orbital.

(ii) Write all possible values of l and m for n = 2.

(2 Marks)

Q8 - Write one isobar of $^{40}_{18}Ar$

(1 Mark)

Q9 - Which series of lines of the hydrogen spectrum lie in the visible region?

(1 Mark)

Q10 - What do you mean that energy of the electron is quantized?

(1 Mark)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#3 : Classification of Elements and Periodicity in Properties -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What are transition elements?

(2 Marks)

Q2 - Why the electron affinity of chlorine is more than that of fluorine?

(2 Marks)

Q3 - Which will have higher first ionisation energy N or O and why?

(3 Marks)

Q4 - Why the value of second electron affinity is positive whereas first electron affinity is always negative?

(3 Marks)

Q5 - Why the first member of a group differs from other elements of same group? Explain.

(2 Marks)

Q6 - Predict formula of stable binary compound that would be prepared by following the pair of element.

(i) Al and C

(ii) Element with at. No. 55 and 35

(iii) Element with atomic no. 56 and oxygen

(iv) Element with atomic number 15 and Fluorine

(v) Pb and element with atomic number 16.

(5 Marks)

Q7 - Arrange O^{2-}, S^{2-}, N^{3-} and F^{-} in increasing order of radii.

(1 Mark)

Q8 - Write four species which are isoelectronic with Ca^{2+}.

(1 Mark)

Q9 - Write the IUPAC name of the following elements with atomic number:

(i) 103 (ii)110

(1 Mark)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#3 : Classification of Elements and Periodicity in Properties -02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - How are the size of cation and anion related to corresponding neutral atoms?

(2 Marks)

Q2 -Arrange the following species in decreasing order of size. Give reasons also.

O^{2-} , F^{-}, Mg^{2+}, Na^{+}, N^{3-}

(3 Marks)

Q3 - Give reasons for the following

(i)The size of Ga is smaller than Al.

(ii)BF3 acts as Lewis acid.

(iii) CCl4 does not undergo hydrolysis.

(iv)PbCl2 does not react with chlorine to form PbCl4.

(v)CO is poisonous in nature.

(5 Marks)

Q4 - Why IUPAC names are assigned to elements having atomic number > 100?

(1 Mark)

Q5 - Give two examples of metalloids.

(1 Mark)

Q6 - Electronegativity is the qualitative measure of the ability of an atom in a chemical compound to attract shared electrons towards itself.

(i) Name two scales which are used to measure the electronegativity of elements.

(ii)Name the element having highest electronegativity.

(2 Marks)

Q7 - Transition metals are widely used as catalysts in many organic and inorganic reactions. Why do these metals show catalytic property?

(1 Mark)

Q8 -The 1st, 2nd, 3rd and 4th ionization energies of an element are 899.5, 1757.1, 14848.7 and 21006.6 KJmol-1respectively. Name the group to which this element belongs.

(3 Marks)

Q9 - Atomic number of an element is 117. Write its electronic configuration and name the group of modern periodic table in which it is placed.

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#3 : Classification of Elements and Periodicity in Properties -03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Write the atomic number and name the two elements, which are named after the name of scientist.

(2 Marks)

Q2 - How many blocks are there in modern periodic table? What is the basis of dividing periodic table in blocks?

(2 Marks)

Q3 - Why the number of elements in first period is only two?

(2 Marks)

Q4 - Define

(i) Covalent radius (ii) van der Waals radius (iii) Metallic radius.

(3 Marks)

Q5 -Arrange the following species in decreasing order of size. Give reasons also.

O2- , F-, Mg2+, Na+, N3-

(3 Marks)

Q6 - (a)Name the most stable conformer of ethane.

(b)Write the electronic configuration of following atoms/ions

Cu, Ca^{2+}, O^{2-}, F^{-}

(5 Marks)

Q7 - Write the group numbers which are placed in p and d block elements in the modern periodic table.

(1 Mark)

Q8 - Write the formula of compound which might be formed by the pair of aluminium and sulphur.

(1 Mark)

Q9 - Write the IUPAC name of the following elements with atomic number:

(i) 103 (ii)110

(1 Mark)

J.E.E. / A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#3 : Classification of Elements and Periodicity in Properties -04** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Explain Newland's law of octave.

(2 Marks)

Q2 - What are Dobereiner's triads?

(2 Marks)

Q3 - (i) What was Mendeleev's periodic law?

(ii) What are the advantages of his periodic table?

(3 Marks)

Q4 - Give reasons for the following

(i)The size of Ga is smaller than Al.

(ii)BF_3 acts as Lewis acid.

(iii) CCl_4 does not undergo hydrolysis.

(iv)$PbCl_2$ does not react with chlorine to form $PbCl_4$.

(v)CO is poisonous in nature.

(5 Marks)

Q5 - Why IUPAC names are assigned to elements having atomic number > 100?

(1 Mark)

Q6 - Write the modern day name of the element which Mendeleev named as Eka – aluminium and Eka – silicon

(1 Mark)

Q7 - Name the transition metal which has the highest melting point.

(1 Mark)

Q8 - Why does the first element of each group of p- block of modern periodic table shows anomalous properties?

(2 Marks)

Q9 - Predict the formula of the stable binary compounds that would be formed by the following pair of elements.

(i)Silicon and oxygen.

(ii)Gallium and chlorine.

(iii)Barium and bromine.

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#4 : Chemical Bonding and Molecular Structure -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Write the configuration of following species and find if they are paramagnetic or diamagnetic.

(i) N_2

(ii) B_2

(3 Marks)

Q2 - Find out which of the following molecules does not exist -

(i) Be_2

(ii) C_2

(2 Marks)

Q3 - What is resonance and resonating structures?

(3 Marks)

Q4 - Explain why CCl_4 has a zero dipole moment although C-Cl bonds are polar.

(2 Marks)

Q5 - Name and draw structure of two compounds which can form intra molecular hydrogen bonding.

(2 Marks)

Q6 - Find bond order of O_2 ,O^{2-} ,O_2^{2-} and O^{2+} and arrange these species in decreasing order of bond lengths.

(5 Marks)

Q7 - What type of orbitals can overlap to form a covalent bond?

(1 Mark)

Q8 - Name the electrons which take part in bond formation.

(1 Mark)

Q9 - Find out the compound in the following in which does not obey the octet rule. SF_2, SF_6, SO_2, SF_4 .

(1 Mark)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#4 : Chemical Bonding and Molecular Structure -02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What is hydrogen bonding? Name the two types of hydrogen bonding?

(3 Marks)

Q2 -Find

(i) Formal charge on S in HSO4-

(ii) Formal charge on P in orthophosphoric acid

(3 Marks)

Q3 - Which of the following bond is most polar?

(i) Cl-F

(ii) Br-F

(iii) I-F

(iv) F-F

(2 Marks)

Q4 - Which of the following compound will have highest solubility in water CCl_4, $CHCl_3$, CS_2,C_2H_5OH.

(2 Marks)

Q5 - Name the type of hybridisation in each carbon atom of the following compounds —

(i) 1, 2 – butadiene

(ii) Propyne

(2 Marks)

Q6 - Find the bond order of NO and CO.

(5 Marks)

Q7 - How is bond order related to the stability of a molecule?

(1 Mark)

Q8 - What is the maximum number of hydrogen bonds in which a water molecule can participate?

(1 Mark)

Q9 - Arrange F_2, N_2, Cl_2, O_2 in increasing order of bond strengths.

(1 Mark)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#4 : Chemical Bonding and Molecular Structure -03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Define octet rule. Give two examples of compounds, which do not follow octet rule.

(2 Marks)

Q2 - Draw Lewis structures of

(i) AlF_3 (ii) CaO (iii) H_2S (iv) C_2H_4 (v) HBr

(5 Marks)

Q3 - Calculate the sigma and pi bonds in the following compound

$(CH_3)\ C_6H_4(OH)$

(2 Marks)

Q4 - Define bond length and bond angle.

(2 Marks)

Q5 -Write the mechanism for chlorination of methane.

(3 Marks)

Q6 - (i)Name the standard state of carbon.

(ii).Which of the following compound will have highest solubility in water, Chloroform or carbon disulphide or methyl alcohol or carbon tetrachloride. Give reason also.

(3 Marks)

Q7 - Predict the dipole moment of a molecule of the type AB4 with square planar arrangement of B atoms.

(1 Mark)

Q8 - Which type of hybridization is present in SF6?

(1 Mark)

Q9 - What type of atomic orbital can overlap to form molecular orbital?

(1 Mark)

J.E.E. / A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#4 : Chemical Bonding and Molecular Structure -04** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Write the differences between sigma and pi bonds.

(3 Marks)

Q2 - What is dipole moment? What is its unit? What is its significance?

(3 Marks)

Q3 - Draw the structure of following molecules and arrange them in decreasing order of bond angles. H_2O, NH_3, CH_4, CO_2.

(5 Marks)

Q4 - Calculate the Bond order of H_2 molecule.

(2 Marks)

Q5 - Write the shapes of CH_4 and CO_2.

(1 Mark)

Q6 - What is the structure of Sulphur tetrafluride?

(1 Mark)

Q7 - Write the type of hybrid orbitals associated with B in BF_3 and P in PCl_5

(1 Mark)

Q8 - Why free rotation about a sigma bond is not possible?

(1 Mark)

Q9 - Which is more stable O_2 or N_2 and. Why?

(1 Mark)

Q10 - Why $FeCl_3$ has greater covalent character than $FeCl_2$?

(1 Mark)

Q11 - Why ethyl alcohol is completely soluble in water?

(1 Mark)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#5 : States of Matter -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Which properties determine the state of matter?

(1 Mark)

Q2 - What do you understand by van der Waals forces?

(1 Mark)

Q3 - Deduce Ideal Gas Equation.

(3 Marks)

Q4 - Explain why, liquids like ether and acetone are kept in cool places.

(2 Marks)

Q5 - CO2 is heavier than O2 and N2 gases present in the air. But it does not form the lower layer of the atmosphere. Why?

(2 Marks)

Q6 - Give the difference between total kinetic energy and translational kinetic energy. For what type of molecules, the two are equal?

(3 Marks)

Q7 - How is the partial pressure of a gas in a mixture related to the total pressure of the gaseous mixture?

(1 Mark)

Q8 - 103 ml of CO_2 were collected at 270C and 763 mm pressure. What will be its volume if the pressure is changed to 721mm at the same temperature?

(2 Marks)

Q9 - An open vessel contains 200 mg of air at 17^0C. What weight percent of air would be expelled if the vessel is heated to 117^0 C ?

(3 Marks)

Q10 - At 0^0C, the density of a gaseous oxide at 2 bar is same as that of nitrogen at 5 bar. What is the molecular mass of the oxide?

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#5 : States of Matter -02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Distinguish a solid, liquid and gas in terms of melting point and boiling point?

(3 Marks)

Q2 - What is the difference between intermolecular forces and intra-molecular forces?

(2 Marks)

Q3 - Define triple point of a substance?

(1 Mark)

Q4 - Which type of intermolecular forces exit among the following molecules?

(a) H_2O molecules.

(b) H_2S molecules.

(c) Cl_2 and CCl_4 molecules

(d) He atoms and HCl molecules

(2 Marks)

Q5 - What do you understand by standard temperature and pressure?

(1 Mark)

Q6 - Write the ideal gas equation for n moles of gas.

(1 Mark)

Q7 - Which of the following has-

(a) highest vapour pressure

(b) lowest vapour pressure.

Acetone, Ethyl alcohol, Water, Diethyl ether

(2 Marks)

Q8 - 34.05 mL of phosphorus vapour weighs 0.0625g at 546^0 C and 0.1 bar pressure. What is the molar mass of phosphorous?

(2 Marks)

Q9 - The density of a gas is 3.80 g L^{-1} at S.T.P. Calculate its density at 27^0C and 700 torr pressure.

(3 Marks)

Q10 - 1 mole of SO_2 gas occupies a volume of 350 mL at 27^0 C and 50 atm pressure. Calculate the compressibility factor of the gas. Write the type of deviation shown by the gas from ideal behavior.

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#5 : States of Matter -03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Write the van der Waal equation for real gases.

(1 Mark)

Q2 - What type of graph will you get when PV is plotted against P at constant temperature?

(1 Mark)

Q3 - What is the S.I. unit of viscosity coefficient?

(1 Mark)

Q4 - What is the difference between normal boiling point and standard boiling point?

(2 Marks)

Q5 - Define-

(a)Critical temperature

(b)Critical pressure

(2 Marks)

Q6 - Why falling liquid drops are spherical?

(2 Marks)

Q7 - What is the significance of van der Waals parameters?

(2 Marks)

Q8 - A 2-L flask contains 1.6g of methane and 0.5g of hydrogen at 27^0 C. Calculate the partial pressure of each gas in the mixture and the total pressure.

(3 Marks)

Q9 - A sealed tube which can withstand a pressure of 3 atmosphere is filled with air at 27^0C and 760 mm pressure. Find the temperature above which it will burst.

(3 Marks)

Q10 - Calculate the pressure exerted by 1 mol of CO_2 at 273 K if the van der Waal's constant 'a'= 3.592 dm^6atm mol-. Assume that the volume occupied by CO_2 molecules is negligible.

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#6 : Thermodynamics -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Explain Open, Closed and Isolated system with examples.

(3 Marks)

Q2 - Explain macroscopic system and properties.

(3 Marks)

Q3 - Define Isochoric process.

(1 Mark)

Q4 - Derive an expression for the work done in an isothermal, reversible process.

(5 Marks)

Q5 - Express the change in internal energy of a system when

(i) No heat is absorbed by the system from the surroundings, but work (w) is done on the system. What type of wall does the system have?

(ii) No work is done on the system, but q amount of heat is taken out from the system and given to the surroundings. What type of wall does the system have?

(iii) w amount of work is done by the system and q amount of heat is supplied to the system. What type of system would it be?

(3 Marks)

Q6 -Two moles of an ideal gas initially at 27^0C and one atmospheric pressure are compressed isothermally and reversibly till the final pressure of the gas is 10 atm. Calculate q, w and Δ U for the process.

(3 Marks)

Q7 - Explain the enthalpy of formation of a substance.

(1 Mark)

Q8 -Give the second law of thermodynamics.

(1 Mark)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#6 : Thermodynamics -02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 -Explain the term system, surrounding and universe with example.

(2 Marks)

Q2 - Express the change in internal energy of a system when

(i) No heat is absorbed by the system from the surroundings, but work (w) is done on the system. What type of wall does the system have?

(ii) No work is done on the system, but q amount of heat is taken out from the system and given to the surroundings. What type of wall does the system have?

(iii) w amount of work is done by the system and q amount of heat is supplied to the system. What type of system would it be?

(3 Marks)

Q3 -Two moles of an ideal gas initially at 270C and one atmospheric pressure are compressed isothermally and reversibly till the final pressure of the gas is 10 atm. Calculate q, w an Δ U for the process.

(3 Marks)

Q4 - Define Exothermic and Endothermic reactions.

(2 Marks)

Q5 - Define the Enthalpy of neutralization of a reaction.

(1 Mark)

Q6 - Define the term Enthalpy of ionization.

(1 Mark)

Q7 - Give the first law of thermodynamics.

(1 Mark)

Q8 -Give the first law of thermodynamics. Derive a mathematical expression for the first law of thermodynamics.

(5 Marks)

Q9 - Give the Hess's Law of constant heat?

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#6 : Thermodynamics -03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 -Define the term Enthalpy.

(1 Mark)

Q2 -Two moles of an ideal gas initially at 27^0C and one atmospheric pressure are compressed isothermally and reversibly till the final pressure of the gas is 10 atm. Calculate q, w and ΔU for the process.

(3 Marks)

Q3 -Define Heat capacity, specific heat capacity and molar heat capacity of a system.

(3 Marks)

Q4 -Define the term, Enthalpy change of a reaction or heat of reaction.

(1 Mark)

Q5 - Explain the enthalpy of combustion of a reaction?

(1 Mark)

Q6 - Define the Gibb's free energy. Give an expression for the Gibb's Helmholtz equation.

(3 Marks)

Q7 - Explain the Born-Haber Cycle in detail.

(5 Marks)

Q8 - Give the applications of Born Haber Cycle.

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#7 : Equilibrium -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - (a) Write expression showing relationship between Kp and KCfor following reaction

$$2NO(g) + Cl_2(g) \rightleftharpoons 2NOCl(g)$$

(b)Define conjugate acid and base with an example.

(5 Marks)

Q2 -(i)Define the term 'pH of solution'.

(ii) The hydrogen ion concentration of a solution is 10-4.Calculate the pH of solution.

(2 Marks)

Q3 - At equilibrium, the concentrations of N_2=0.0032 M, O_2= 0.0043 M and NO =0.0026 M in a sealed vessel at 800K. What will be Kc for the reaction?

$$N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$$

(2 Marks)

Q4 - For the equilibrium, $2\,NOCl(g) \rightleftharpoons 2NO(g) + Cl_2(g)$

The value of equilibrium constant,Kc is 4.30 x 10-6 at 1069 K. calculate the Kp for the reaction at this temperature?

(3 Marks)

Q5 -Hydrolysis of sucrose gives,

Sucrose + water $\rightleftharpoons$ Glucose + Fructose

Equilibrium constant, Kc for the reaction is 3x1011 at 300 K. Calculate G a$\triangle$300 K

(2 Marks)

Q6 -State Ostwald's dilution law.

(2 Marks)

Q7 -The pKa of acetic acid and pKb of ammonium hydroxide are 4.82 and 4.72. Calculate the pH of ammonium acetate solution?

(2 Marks)

Q8 - Calculate the solubility of AX in pure water. The solubility product of AX is 2.5 $x10^{-20}$.

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#7 : Equilibrium -02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What are the applications of Equilibrium constant?

(3 Marks)

Q2 - What is Le Chatelier's principle?

(1 Mark)

Q3 - What are the effects of temperature, Pressure and concentration on the equilibrium?

(3 Marks)

Q4 - What are the effects of catalyst and inert gas addition?

(2 Marks)

Q5 - What is an Ionic Equilibrium?

(1 Mark)

Q6 -What is a chemical equilibrium?

(1 Mark)

Q7 -Define Law of chemical equilibrium.

(2 Marks)

Q8 -(i)Define the term 'pH of solution'.

(ii) The hydrogen ion concentration of a solution is 10-4.Calculate the pH of solution.

(2 Marks)

Q9 - For the equilibrium, $2\,NOCl(g) \rightleftharpoons 2NO(g) + Cl_2(g)$

The value of equilibrium constant,Kc is 4.30 x 10-6 at 1069 K. calculate the Kp for the reaction at this temperature?

(3 Marks)

Q10 -What is Solubility Product?

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#7 : Equilibrium -03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 -Define Lewis Acids and Bases.

(1 Mark)

Q2 -What is a Common Ion Effect?

(2 Marks)

Q3 - At equilibrium, the concentrations of N_2=0.0032 M, O_2= 0.0043 M and NO =0.0026 M in a sealed vessel at 800K. What will be Kc for the reaction?

$$N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$$

(2 Marks)

Q4 -12.8 gm of N2O4 was placed in a 1L reaction vessel at 400 K and allowed to attain equilibrium

$$N_2O_4 \rightleftharpoons 2NO_2$$

The total pressure at equilibrium was found to be 8.29 bar calculate Kp ,Kc and partial pressure at equilibrium?

(5 Marks)

Q5 -Hydrolysis of sucrose gives,

Sucrose + water $\rightleftharpoons$ Glucose + Fructose

Equilibrium constant, Kc for the reaction is $3x10^{11}$ at 300 K. Calculate ΔG at 300 K

(2 Marks)

Q6 -Write conjugate acid of NH_3.

(1 Mark)

Q7 -Write conjugate acid of $HCOO^-$.

(1 Mark)

Q8 -Write conjugate base of $HClO_4$.

(1 Mark)

Q9 - The ionization constant of HF is 3.4×10^{-4}. Calculate the degree of dissociation of HF in its 0.02 M solution?

(3 Marks)

Q10 - Calculate the solubility of AX in pure water. The solubility product of AX is 2.5×10^{-20}.

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#1 : Redox Reactions -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Name the oxidiser and reducer in the following reaction:-

$SnCl_2 + 2FeCl_3 \longrightarrow SnCl_4 + 2FeCl_2$

(1 Mark)

Q2 - Define oxidation number and calculate the oxidation number of Cr in $K_2Cr_2O_7$.

(2 Marks)

Q3 - What is the usual oxidation state of oxygen? In which type of compounds oxygen shows an oxidation no. of -1 and +2?

(1 Mark)

Q4 - What is meant by half reaction?

(1 Mark)

Q5 - Balance the following equation in the acidic medium by oxidation number method.

$$MnO_4^-(aq) + C_2H_2O_4(aq) + H^+ \longrightarrow Mn^{2+}(aq) + CO_2(g) + H_2O(l)$$

(5 Marks)

Q6 - Write the half reactions for the following Redox reaction;-

(a) $2Fe^{3+}(aq) + 2I^-(aq) \longrightarrow 2Fe^{2+}(aq) + I_2(aq)$

(b) $Zn(s) + 2H^+(aq) \longrightarrow Zn^{2+}(aq) + H_2(g)$

(2 Marks)

Q7 - Identify the strongest and the weakest reducing agents from the following metals:-

Zn, Cu, Ag, Na

(2 Marks)

Q8 - The standard reduction potential for Cu^{2+}/Cu is +0.34 V. Calculate the standard reduction potential at pH =14 for the above couple Ksp of $Cu(OH)_2$ is $1.0X10^{-19}$.

(3 Marks)

Q9 - Calculate pH of the following half cell Pt, H_2/H_2SO_4. The oxidation potential is +0.3 V.

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#9: Hydrogen -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - How do we differentiate between the three isotopes of hydrogen ?

(1 Mark)

Q2 - Which of the isotopes of hydrogen is radioactive?

(1 Mark)

Q3 - Give the chemical formula for Heavy Water?

(1 Mark)

Q4 - Why does hydrogen occupies an unique place in the Periodic Table?

(2 Marks)

Q5 - How is Hydrogen prepared in Laboratory?

(2 Marks)

Q6 - Explain Water-gas shift reaction ?

(2 Marks)

Q7 - Give the uses of Hydrogen Peroxide ?

(3 Marks)

Q8 - Explain the resemblance of Hydrogen with Alkali metals and Halogens ?

(5 Marks)

Q9 - Give the structure of Hydrogen Peroxide ?

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#9: Hydrogen -02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Which is the third most abundant element in the universe.

(1 Mark)

Q2 - What is the Electronic configuration of hydrogen?

(1 Mark)

Q3 - Name the three isotopes of hydrogen.

(1 Mark)

Q4 - Give the Physical properties of Dihydrogen ?

(2 Marks)

Q5 - What are the basic classification of Hydrides?

(2 Marks)

Q6 - How are Molecular hydrides classified on the basis of electrons and bonds in the Lewis structure?

(2 Marks)

Q7 - Explain the method of preparation of Heavy Water. Where is it used ?

(3 Marks)

Q8 - Calculate the strength of 10 volume solution of Hydrogen Peroxide.

(3 Marks)

Q9 - Give five different ways of preparing hydrogen.

(5 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#9: Hydrogen -03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What is the common name of Deuterium?

(1 Mark)

Q2 - Name the gases which present in Water Gas?

(1 Mark)

Q3 - What is the common name of Water Gas?

(1 Mark)

Q4 - Explain the term Electron-deficient?

(2 Marks)

Q5 - Explain the term Electron rich hydrides?

(2 Marks)

Q6 - Which of the hydrides behave as Lewis acid and Lewis bases?

(2 Marks)

Q7 - Explain the structure of water molecule ?

(3 Marks)

Q8 - Differentiate between Ortho and Para hydrogen ?

(3 Marks)

Q9 - How is pure hydrogen prepared in laboratory?

(5 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#10: The s-Block Elements-01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What is the general electronic configuration of the outermost shell of alkali metals?

(1 Mark)

Q2 - What are the main sources of lithium?

(1 Mark)

Q3 - Which alkaline earth metal forms covalent compound?

(1 Mark)

Q4 - Alkali metals and their salts give characteristic colour of the flame. Explain?

(2 Marks)

Q5 - A piece of burning magnesium ribbon continues to burn in SO2.why?

(2 Marks)

Q6 - Beryllium and Magnesium do not give colour to the flame why?

(2 Marks)

Q7 - When an alkali metal dissolves in liquid ammonia, the solution acquires different colours. Explain?

(3 Marks)

Q8 - Comment on the following:

i) KO_2 is paramagnetic.

ii) BeO is insoluble but $BeSO_4$ is soluble in water.

iii) Lithium is the only alkali metal which forms nitride directly.

(3 Marks)

Q9 - Discuss the position of alkali metals in the periodic table. Also discuss the trends in some important atomic and physical properties in the group.

(5 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#10: The s-Block Elements-02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Why sodium should kept away from water?

(1 Mark)

Q2 - Write the chemical formula of Plaster Paris?

(1 Mark)

Q3 - What is fly ash?

(1 Mark)

Q4 - What are the biological importance Na^+ and K^+ ions?

(2 Marks)

Q5 - How is Plaster of Paris prepared? Write its chief property due to which it is widely used.

(2 Marks)

Q6 - What is the Portland cement?

(2 Marks)

Q7 - Alkaline earth metals form bivalent compounds. Explain.

(3 Marks)

Q8 - Discuss the diagonal relation relationship between Beryllium and Aluminum. By giving some points of resemblance between them.

(3 Marks)

Q9 - Discuss the abnormal behavior of lithium. Also mention some similarities between lithium and magnesium.

(5 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#10: The s-Block Elements-03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Lithium has highest ionization energy as compared to other element same group. Why?

(1 Mark)

Q2 - Name the strongest reducing agent alkali metal?

(1 Mark)

Q3 - Write the chemical formula of gypsum?

(1 Mark)

Q4 - Why alkali metals are difficult to reduce?

(2 Marks)

Q5 - Why the alkali metals cannot be isolated by electrolysis of the aqueous solution of their salts?

(2 Marks)

Q6 - Sodium bicarbonate is prepared by Solvay-Ammonia process but Potassium bicarbonate can not. why?

(2 Marks)

Q7 - What happens when

i) Sodium hydrogen carbonate is heated.

ii) Carbon dioxide is passed through ammonical brine solution.

iii) Chlorine reacts with slaked lime.

(3 Marks)

Q8 - Compare alkali metals and alkaline earth metals on the basis of :-

i) Ionization enthalpy.

ii) Basicity of oxides.

iii) Solubility of hydroxides.

(3 Marks)

Q9 - How the chemistry of alkali metals differs from alkaline earth metals? Explain.

(5 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#11: The p-Block Elements -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Why does boron not form B3+ ions?

(1 Mark)

Q2 - Write two important compounds of Boron.

(1 Mark)

Q3 -How do we obtain Metaboric Acid?

(1 Mark)

Q4 -Give the chemical equation involved in the preparation of Diborane in laboratory.

(2 Marks)

Q5 - How do we prepare orthoboric acid?

(2 Marks)

Q6 - $[SiF_6]^{2-}$ is known whereas $[CF_6]^{2-}$ is not. Why?

(2 Marks)

Q7 - Give the uses of diamond.

(2 Marks)

Q8 -What do you understand by Water gas?

(3 Marks)

Q9 -How do we obtain producer gas?

(3 Marks)

Q10 -What is dry ice? How will you prepare pure sample of CO (carbon monoxide)?

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#12: Organic Chemistry - Some Basic Principles and Techniques-01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Define Organic chemistry.

(1 Mark)

Q2 - Organic chemistry is treated as a separate branch. Why?

(5 Marks)

Q3 - Write a short on the tetravalency of carbon.

(2 Marks)

Q4 - What are the main characteristics of a Homologous series.

(3 Marks)

Q5 - What are aliphatic hydrocarbons? Give their classification.

(3 Marks)

Q6 - What are primary, secondary tertiary and quaternary carbon atoms?

(2 Marks)

Q7 - What is the parent or principal chain in an organic compound?

(1 Mark)

Q8 - Define primary suffix. Also give their names.

(1 Mark)

Q9 - What is a Lassaigne's Extract?

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#12: Organic Chemistry - Some Basic Principles and Techniques-02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What are isomers? Explain with example.

(2 Marks)

Q2 - What is a sigma (s) bond?

(1 Mark)

Q3 - What is the pi (p) bond?

(1 Mark)

Q4 - Explain sp^3 hybridisation in the terms of carbon atom.

(1 Mark)

Q5 - What is the word root? Give example.

(2 Marks)

Q6 - Define Metamerism and Position Isomerism. Give Examples.

(3 Marks)

Q7 - What are Homolytic and Hetrolytic Fission?

(3 Marks)

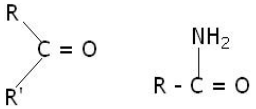
Q8 - Solve the following Problems:

A) During estimation of nitrogen present in an organic compound by Kjeldahl's method the ammonia evolved from 0.8 gm of nitrogen, neutralized 10 ml of 1 M . Find out the percentage of nitrogen in the compound.

B) In sulphur estimation, 0.160 gm of an organic compound gave 0.4820 gm of barium sulphate .What is the percentage of sulphur in the compound ?

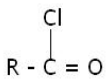
(5 Marks)

Q9 - Recognize the functional group present in the following compounds.



i)

ii)



iii)

iv) RCOOR'

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#12: Organic Chemistry - Some Basic Principles and Techniques-03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What is a homologous series? Explain with example.

(2 Marks)

Q2 - What is an alkyl group?

(2 Marks)

Q3 - Explain sp^2 hybridization?

(1 Mark)

Q4 - What do understand by sp hybridization?

(1 Mark)

Q5 - Name the various systems in which organic compounds are named?

(1 Mark)

Q6 - Write Resonance Structures of Nitrobenzene.

(2 Marks)

Q7 - Write a Short note on Electromeric Effect and Hyperconjucation.

(3 Marks)

Q8 - How Organic Reaction can be classified.

(2 Marks)

Q9 - Define Distillation and Differential Extraction.

(3 Marks)

Q10 - Write test for Nitrogen and Sulphur.

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#13: Hydrocarbons-01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Write the general formula for the following
(i) Cycloalkanes
(ii) Cycloalkenes

(1 Mark)

Q2 - State Markovnikov's rule.

(1 Mark)

Q3 - How a sigma bond is different from pi bond?

(1 Mark)

Q4 - Define electrophile and nucleophile with examples.

(2 Marks)

Q5 - Write the IUPAC name of the following compounds
(a) $(CH_3)_3C\text{-}CH_2C(CH_3)_3$
(b) Tetra-tert-butylmethane

(2 Marks)

Q6 - Explain Huckel Rule? Draw the structure of Pyridine and Furan. Are these aromatic?

(2 Marks)

Q7 - Represent the following by chemical reactions:
(i) n-heptane is heated with vanadium pentaoxide at 773 K temperture and 10-20 atmospheric pressure.
(ii) Calcium carbide reacts with water.
(iii) Propene reacts with HBr.

(3 Marks)

Q8 - How will you prepare cis and trans alkenes separately? Give chemical reactions for both.

(3 Marks)

Q9 - Give the structures of the following compounds?
(a) Benzene
(b) Anthracene
(c) Napthalene
(d) Phenanthrene
(e) Toluene

(5 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#13: Hydrocarbons-02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What do you mean by structural isomerism?

(1 Mark)

Q2 - Define hydrocarbons.

(1 Mark)

Q3 - Calculate the number σ a π bonds i≡ν C-Cl≡C N.

(1 Mark)

Q4 - Name the acid whose sodium salt is required for the preparation of propane? Write chemical equation for the reaction.

(2 Marks)

Q5 - Draw the Newman's projection of ethane.

(2 Marks)

Q6 - What do you understand by torsional angle? Which of the conformations of ethane has the maximum and the minimum torsional strain?

(2 Marks)

Q7 - Write the conditions which are necessary for a compound to show geometrical isomerism. Will butene exhibit geometrical isomerism, if yes draw its geometrical isomers?

(3 Marks)

Q8 - (i)Convert ethene into benzene.
(ii)Why HF forms hydrogen bonding with ethyne even though it is non-polar in nature?

(5 Marks)

Q9 - (a) How will you convert ethanoic acid into methane?
(b) Write the name of the products and the chemical reactions involved for the following reaction:
(i) Hex-1-ene reacts with HBr - in the absence of peroxide.
(ii) Hex-1-ene reacts with HBr – in the presence of peroxide.

(3 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#13: Hydrocarbons-03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

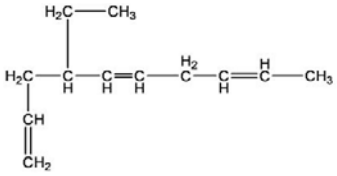
Q1 - Define conformation.

(1 Mark)

Q2 - Define cracking with an example.

(1 Mark)

Q3 - Write the IUPAC name of the following compound



(1 Mark)

Q4 - Draw all the possible structural isomers of C6H14. Also write their IUPAC names.

(2 Marks)

Q5 - Convert

(i) Phenol into benzene.

(ii)Benzene into ethyl benzene.

(2 Marks)

Q6 - Which one is more polar, cis-but-2-ene or trans-but-2-ene and why?

(2 Marks)

Q7 - Convert:

(a) Ethylene to ethane.

(b) Benzene to acetophenone.

(3 Marks)

Q8 - (i)With the help of resonating structures explain that methyl group is *o,p*- directing?

(ii)Convert acetic acid to ethylene.

(3 Marks)

Q9 - Complete the following reactions:

(i) $C_6H_6 + \text{Conc. } HNO_3 + \text{Conc. } H_2SO_4 \xrightarrow{323K - 333K}$

(ii) $C_6H_6 + H_2SO_4(SO_3) \xrightarrow{heat}$

(iii) $C_6H_6 + Cl_2 \xrightarrow{anhy.\ AlCl_3}$

(iv) $C_6H_6 + CH_3Cl \xrightarrow{anhy.\ AlCl_3}$

(v) $C_6H_6 + CH_3COCl \xrightarrow{anhy.\ AlCl_3}$

(5 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#14: Environmental Chemistry -01** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What do you understand by anoxia or asphyxiation ?

(1 Mark)

Q2 - What is the effect of CFCs on ozone layer ?

(1 Mark)

Q3 - Write any four methods for waste management .

(1 Mark)

Q4 - What do you understand by viable and non-viable particulates?

(2 Marks)

Q5 - What is Green house Effect?

(2 Marks)

Q6 - Differentiate between classical (London smog) and photochemical smog

(3 Marks)

Q7 - What do you understand by global warming? What could be the consequences of global warming?

(3 Marks)

Q8 - What do you understand by green chemistry? How can the environmental pollution be decreased by green chemistry?

(5 Marks)

Q9 - Why is acid rain considered as threat to Taj-Mahal?

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#14: Environmental Chemistry -02** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Which gas leaked to bring havoc in Bhopal tragedy?

(1 Mark)

Q2 - Write two important sinks of CO_2 ?

(1 Mark)

Q3 - What is the role of the builder in synthetic detergents?

(1 Mark)

Q4 - Why ' photochemical smog' is so called ? Write the composition of photochemical smog ?

(2 Marks)

Q5 - What is 'asbestosis' and 'silicosis'?

(2 Marks)

Q6 - What do you mean by COD ?

(2 Marks)

Q7 - What would have happened if the green house gases were totally missing in the earth's atmosphere?

(3 Marks)

Q8 - Write the reactions involved for ozone layer depletion in the stratosphere?

(3 Marks)

Q9 - What is the significance of dissolved oxygen in water? Name the processes which are responsible for the deoxygenation of water.

(5 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#14: Environmental Chemistry -03** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Define incineration?

(1 Mark)

Q2 - Name 2 gases which form acid rain ?

(1 Mark)

Q3 - Name the main compounds which are causing damage to ozone layer ?

(1 Mark)

Q4 - What is BOD?

(2 Marks)

Q5 - What do you understand by aerosols ?

(2 Marks)

Q6 - What is pneumoconiosis ?

(2 Marks)

Q7 - How NO is depleting ozone layer?

(3 Marks)

Q8 - Which reactions are involved during the formation of photochemical smog?

(3 Marks)

Q9 - Explain the formation of acid rain. How it is harmful to the environment?

(5 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#14: Environmental Chemistry -04** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - Define loam soil ?

(1 Mark)

Q2 - Name the aromatic compounds which are present as particulates in the air?

(1 Mark)

Q3 - Define marine pollution ?

(1 Mark)

Q4 - Explain why carbon monoxide gas is more dangerous than carbon dioxide gas?

(3 Marks)

Q5 - What is tropospheric pollution ?

(3 Marks)

Q6 - What do you understand by pesticides?

(2 Marks)

Q7 - Define herbicides.

(3 Marks)

Q8 - How can domestic wastes be used as manure?

(2 Marks)

Q9 - Write short notes on: –

(a) Smoke

(b) Mists

(c) Dust

(d) Fumes

(2 Marks)

Q10 - Write the permited safety limit of fluoride and lead concentration with respect to international standards of drinking water?

(2 Marks)

J.E.E./A.I.P.M.T.Foundation - XI Chemistry Worksheet

Time: 30 min **Ch#14: Environmental Chemistry -05** **Full Marks: 20**

Instructions:

1. All questions are compulsory.

2. Please give the explanation for the answer where applicable.

Q1 - What do you understand by environmental chemistry?

(1 Mark)

Q2 - Define environmental pollution ?

(1 Mark)

Q3 - What is inversion temperature in different regions of the atmosphere?

(1 Mark)

Q4 - Name two insecticides.

(1 Mark)

Q5 - What is smog ?

(1 Mark)

Q6 - Name the gases which are responsible for green house effect.

(1 Mark)

Q7 - What do you understand by humification?

(1 Mark)

Q8 - Write the harmful effects of SO2 or oxides of sulphur to the atmosphere.

(3 Marks)

Q9 - How do synthetic detergents present as water pollutants create problems?

(3 Marks)

Q10 - What do you mean by eutrophication?

(2 Marks)

Q11 - How would you say that the presence of CO reduces the amount of haemoglobin in the blood for carrying oxygen to the body cell?

(2 Marks)

Q12 - What remedial steps should be taken to save a person suffering from CO poisoning?

(3 Marks)