DELHI PUBLIC SCHOOL,JAMMU
Assignment CYCLE TEST II(2019-20)

CLASS: 11th **SUBJECT: CHEMISTRY**

SECTION A

Questions 1 to 5 are passage questions:

The solubility of a crystalline compound in water is influenced by two factors i.e., hydration enthalpy and lattice enthalpy. Lattice enthalpy is needed to separate the ions of the crystal lattice. At the same time, energy is released when the ions are dissolved in water. The resultant of theses two opposite forces decide the solubility of the compound.

Q.1 Name the group-1 hydroxide which is highly water soluble.
Q.2 Name the group-2 hydroxide which is highly water soluble.
Q.3 Name the group-1 sulphate which is highly water soluble.
Q.4 Name the group-2 sulphate which is highly water soluble.
Q.5 Li salts are water insoluble. Why?

Questions 6 to 10 are one word answers:

Q.6 Define pH.
Q.7 What is meant by the term 'ionic product of water'.
Q.8 What will happen to the pH of water on increasing the temperature?
Q.9 Which is the most stable carbocation?
Q.10 What is meant by the term 'fractional distillation'?

Questions 11 to 15 are multiple choice questions:

Q.11 Oxidation number of fluorine in OF_2 is:
(1) +1 (2) +2 (3) -1 (4) -2

Q.12 Which of the following shows highest oxidation number in combined state?
(1) Os (2) Ru (3) Both 1 and 2 (4) None

Q.13 Which of the following exists as hydrated salt -
(1) NaCl (2) LiCl (3) RbCl (4) KCl

Q.14 Alkali metals dissolve in liquid NH_3 then which of the following observations is not true:
(1) It become paramagentic (2) Solution turns into blue to solvated electrons
(3) It becomes diamagnetic (4) Solution becomes conducting

Q.15 The equilibrium constant in a reversible reaction at a given temperature:
(1) Depends on initial concentration of the reactants
(2) Depends on the concentration of the products at equilirnium
(3) Does not depend on the initial concentrations
(4) It is not characteristic of the reaction

Questions 16 to 20 (assertion and reasoning):

In the following questions, a statement of assertion (A) followed by a statement of reason (R) is given. Choose the correct option out of the choices given below for question no. 16 to 20:

(a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.

(b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.

(c) Assertion is correct, but reason is wrong statement.

(d) Assertion is wrong, but reason is correct statement.

Q.16 **A :** $K_p = K_C$ for all reactions.
R : At constant temperature, the pressure of the gas is proportional to the concentration.

Q.17 **A :** The value of K increases when concentration of the reactants are increased.
R : With increases of concentration of reactants the equilibrium shifts in forward direction.

Q.18 **A:** Chlorides of Li, Be and Mg are covalent in nature
R: Li, Be and Mg have large cationic size in the s-block elements

Q.19 **A:** Alkaline earth metal and alkali metal form superoxide.
R: Both have tendency to form single bond.

Q.20 **A:** $KClO_3$ $KClO_4$ + KCl This is a disporportional type reaction.
R: The reaction in which one substance oxidise or reduce is known as disproportion reaction.

SECTION B (CARRYING 2 MARKS EACH)

Q.21 What are resonating structures? Give their application to explain stability.
Q.22 Be and Mg donot show flame colouration test. Why?
Q.23 What are lewis acids and bases? Give example.

SECTION C (CARRYING 3 MARKS EACH)

Q.24 The degree of ionization of a 0.1 M bromoacetic acid solution is 0.132. Calculate the pH of the solution and the pK_a bromoacetic acid.

Q.25 The Mn^{3+} ion is unstable in solution and under goes disproportion to give Mn^{2+}, MnO_2 and H^+ ion. Write a balanced ionic equation for the reaction.

Q.26 What happens when

(i) Sodium metal is droped in water?

(ii) Sodium metal is heated in free supply of air?

(iii) Sodium peroxide dissolve in water?

SECTION D (CARRYING 5 MARKS EACH)

Q.27 The first ionization constant of H_2S is 9.0×10^{-8}. Calculate the concentration of HS^- ions in its 0.1M solution and how will this concentration be affected if the solution is 0.1 M in HCl also? It the second dissociation constant of H_2S is 1.2×10^{-13}, calculate the concentration of S^{2-} under both conditions.

Q.28 Balance the following redox reactions by ion-electron method.

(a) $MnO_4^-(aq) + I^-(aq) \longrightarrow MnO_2(s) + I_2(s)$ (in basic medium)

(b) $MnO_4^-(aq) + SO_2(g) \longrightarrow Mn^{2+}(aq) + HSO_4^-$ (in acidic solution)

Q.29 Define the following:

(a) Hyperconjugation (b) Electromeric effect (c) Inductive effect

(2) Draw the resonating structures and resonance hybrid for phenol.