**DELHI PUBLIC SCHOOL, JAMMU.**

**( ASSIGNMENT)**

**(2016-2017)**

**SUB- CHEMISTRY (Theory)** **Class – XI**

1. What is the oxidation state of S in $Na_2S_2O_3$.
2. Write the conjugate acids of $C_6H_5OH$ .
3. Which out of lithium or sodium forms nitrides?
4. Ice floats over water .Explain.
5. Out of MgO and LiCl, which has higher lattice energy?
6. Calculate the wavelength of an electron having mass= $9.1 \times 10^{-31}$Kg and kinetic energy= $3.0 \times 10^{25}$ J.
7. Ionic product of water at 310 k is $2.7 \times 10^{-14}$.What is the pH of neutral water at this temperature.
8. The species $H_2O$,$HCO_3^-$,$HSO_4^-$ and $NH_3$ can act both as Bronsted acids and bases. For each case give the corresponding conjugate acid and base.
9. Predict the Entropy change in the following
   i) Temperature of a crystal is increased.
   ii) A liquid substance crystallizes into a solid.
10. What is the solubility product. Explain it with an example
11. Draw structures of cyclic and acyclic isomers of molecular formulae $C_3H_6O$.
12. a) What is the significance of the terms “isolated gaseous atom” and “ ground state” while defining the ionization enthalpy and electron gain enthalpy
    b) Which of the two: Na or Mg has higher second ionization enthalpy.
13. Which of the four quantum numbers (n, l, m, and s) determine?
    i) The energy of the electron in an hydrogen atom and multi electron atoms
    ii) The size of an orbital
    ii) The shape of an orbital. the orientation of the orbital in space
14 .Explain the following
    i) Boric acid is polymeric
    ii) Graphite is used as lubricant
    iii) CO is heated with ZnO
15. Balance the following redox reaction by ion electron method

    $Br_2 + H_2O_2 \rightarrow BrO_3^- + H_2O$ (in acidic medium)

16. With the help of molecular orbital level diagram, explain the following:
    i) $O_2$ molecule is paramagnetic
    ii) $Ne_2$ molecule does not exist
    iii) Why $N_2$ is diamagnetic
17. Explain the following
    i) Evaporation leads to cooling
    ii) Viscosity of a liquid decreases with the rise in temperature.
    iii) All gases cannot be liquefied at room temperature.
18. Define the following terms:
    i) Boyle’s law
    ii) Dalton’s law

19. Define the following

i) Entropy of fusion

ii) Entropy of vaporization

iii) Entropy of sublimation.

20. a) Define Ionization enthalpy ,Explain its variation along a period and down a group.

21.a) What is common ion effect. Explain with example.

b) Account for dynamic nature of equilibrium

c) All Bronsted bases are also Lewis bases but all Bronsted acids are not Lewis acids

22. Define the following

i) Hund's rule

ii) Aufbau principle

. iii) Pauli exclusion principle

23. Nitrogen fertilizers are commonly used to promote the growth of plants and boost the crop yield. As a student of chemistry, can you suggest a farmer whether he should use excess nitrogenous fertilizers to get maximum yield or not.

24. Give reasons for the following observations:

a) Give three methods of preparation of benzene.

b) Explain the reaction of sulphonation of benzene.

c) IUPAC name of $(CH_3)_2C(C_2H_5)_2$.

OR

a) Write a short note of the following.

i) Wurtz reaction

ii) Friedel craft reaction

iii) Convert Propene to Propanol.

b) Why is benzene extraordinarily stable though it contains three double bonds.

25. (a) On the basis of VSEPR theory, explain the shapes of following

$H_2O$ and $NH_3$ molecules.

(b) Draw resonance structures for $SO_3$ and $CO_2$.

c) Which out of $NH_3$ and $NF_3$ has higher dipole moment and Why.

OR

(a) Explain the structures of the following molecules on the basis of hybridisation.

i) $PF_5$ ii) $BrF_5$ iii) $XeF_4$

(b) Which out of CO or $CO_2$ is more dangerous pollutant?

26. a) What is meant by empirical and molecular formulae.

b) A compound contain 4.07% hydrogen, 24.27% carbon and 71.65%chlorine .Its molecular mass is 98.96. What are its empirical and molecular formulae?

Or

a) Write down the chemical reactions involved in the formation of photochemical smog

b) What is inductive effect and hyper conjugation

c) Explain the structure of diborane.