Class: XI **Subject : Chemistry** **Assignment No. 2**

Q1) Write hybridization of central atom of the following species.
a) NH_4^+ b) H_3O^+ c) PCl_5 d) SO_4^{2-} e) I_3^-

Q2) Which has higher dipole moment CH_3F or CH_3Cl?

Q3) What is the effect of temperature and pressure on the following properties of liquid .
a) surface tension b) viscosity

Q4) Balance the following redox reaction as per the given instruction :
i) $Cr_2O_7^{2-} + SO_2 + H^+ \longrightarrow Cr^{3+} + HSO_4^- + H_2O$ (by ion electron method)
ii) $MnO_4^-(aq) + Br^-(aq) \longrightarrow MnO_2(s) + BrO_3^-(aq)$ (by ion electron method in basic medium)

Q5) Give reasons:
a) In PCl_5 why are axial bonds are longer than equatorial bonds?
b) Why dipole moment of NH_3 is more than NF_3? Why dipole moment of NH_3 is more than NF_3?
c) A molecule of PCl_5 exists but that of NCl_5 does not.
d) BF_3 molecule has zero dipole moment although B——F bonds are polar.
e) Bond angle in water is less than that of ammonia.

Q6) State and explain Hess's law of constant heat summation with suitable example.

Q7) State Dalton's law of partial pressure also give its two applications.

Q8) A mixture of hydrogen and oxygen at one bar pressure contains 20% by weight of hydrogen. Calculate partial pressure of hydrogen.

Q9) Calculate oxidation number of underlined elements in the following compounds:
a) H_2SO_5 b) $KMnO_4$ c) CrO_5 d) Fe_3O_4

Q10) What is the value of ΔG for the following process?
i) At boiling point of water.
ii) At melting point of ice.

Q11) How much time would it take to distribute one Avogadro's number of wheat grains if 10 grains are distributed each second?

Q12) Calculate the total no. of electrons present in 1.4 g of nitrogen gas.

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