INTERMEDIATE-1st YEAR CHEMISTRY

Model Paper-2

Time-3hours   **Maximum marks:60**

SECTION_A   (10x2=20M)

NOTE: Answer all questions.

1. Define mole and calculate the number of molecules present in 1.12×10^{-7} **ccof a gas S.T.P**

2. What is Boltzmann constant?Give its value?

3.The equilibrium constant for the reaction $2x + y \xrightleftharpoons{\Delta} x_2 y$ **is 10 L^2 mol^{-2}. The rate constant for the backward reaction 28 s^{-1} . What is the rate constant of the forward reaction ?**

4. What do you mean by autoprotolysis? Give the equation to represent the autoprotolysis of water.

5. Write the balanced equations for the reactions between

 i) Na_2O_2 **and water. ii)** K_2O **and water.**

6. What happens when magnesium metal is burnt in air? Give equation.

7.   Define the terms TLV, contaminant and sink.

8. What is Global warming? name any two green house gases.

9. Both CCl4 and SiCl4 has stable octets of the central atoms, but SiCl4 is acidic. Why ?

10.DiscussMarkownikoff'srule with example.

SECTION-B

NOTE: Answer any Six of the following   (6x4m=24marks)
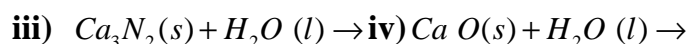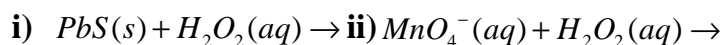
11. Define the terms rms, average and most probable speeds of gas molecules. Give their interrelationship.

12. Balance the   following   equation   by Ion electron method

$Cr_2O_7^{-2} + NO_2^- \rightarrow Cr^{+3} + NO_3^-$ **in acidic medium**
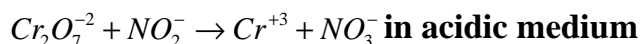
13 .Explain the spontaneity of a reaction interms of Gibbs free energy .

14.   complete and balance the following chemical equations.

   i) $PbS(s) + H_2O_2(aq) \rightarrow$ **ii)** $MnO_4^-(aq) + H_2O_2(aq) \rightarrow$

   iii) $Ca_3N_2(s) + H_2O\ (l) \rightarrow$ **iv)** $Ca\ O(s) + H_2O\ (l) \rightarrow$

15. Write any one method of preparation of Diborane and discuss its structure.

16. What are buffer solutions?   Give one example to each type of buffer.

17.   what is Lanthanide contraction?Give its consequences.

18. Mention the characteristic properties of transition elements.

SECTION-C

 NOTE: answer any two questions   (2X8=16M)

19.What are the main Postulates of Bohr's theory of hydrogen atom?

Discus the importance of this model to explain various series of line spectra in hydrogen atom.

20.Write the salient features of Molecular Orbital Theory.He$_2$ molecule does not exist.why?

21.Describe any two methods of preparation of Benzene. Explain the halogenation, friedal craft's alkylation, Nitration and sulphonation of benzene with equations.