11 -Std MONTHLY TEST- AUGUST - 2024
CHEMISTRY

Time : 1.30 hrs Max.Marks : 50

I. Answer all the questions. **10x1=10**

1. Which of the following elements will have the highest electronegativity?
   a) Chlorine b) Nitrogen c) Cesium d) Fluorine
2. Which of the following pairs of elements exhibit diagonal relationship?
   a) Be and Mg b) Li and Be
   c) Be and B d) Be and Al
3. IE1 and IE2 of Mg are 179 and 348 kcal mol^{-1} respectively. The energy required for the reaction $Mg \rightarrow Mg^{2+} + 2e^-$ is
   a) +169 kcal mol^{-1} b) - 169 kcal mol^{-1}
   c) + 527 kcal mol^{-1} d) - 527 kcal mol^{-1}
4. Water gas is
   a) $H_2O_{(g)}$ b) $CO + H_2O$
   c) $CO + H_2$ d) $CO + N_2$
5. The cause of permanent hardness of water is due to
   a) $Ca(HCO_3)_2$ b) $Mg(HCO_3)_2$
   c) $CaCl_2$ d) $MgCO_3$
6. In an adiabatic process, which of the following is true ?
   a) q = w b) q = 0 c) $\Delta E = q$ d) $P\Delta V = 0$
7. The values of ΔH and ΔS for a reaction are respectively 30 kJ mol^{-1} and 100 $JK^{-1}mol^{-1}$. Then the temperature above which the reaction will become spontaneous is
   a) 300 K b) 30 K c) 100 K d) 20 C
8. If K_b and K_f for a reversible reaction are 0.8×10^{-5} and 1.6×10^{-4} respectively, the value of the equilibrium constant is,
   a) 20 b) 0.2×10^{-1} c) 0.05 d) none of these
9. Solubility of carbon dioxide gas in cold water can be increased by
   a) increase in pressure b) decrease in pressure
   c) increase in volume d) none of these
10. In a chemical equilibrium, the rate constant for the forward reaction is 2.5×10^2 and the equilibrium constant is 50. The rate constant for the reverse reaction is,
    a) 11.5 b) 5 c) 2×10^2 d) 2×10^{-3}

PART- II

II. Answer any 5 questions.
Question No. 18 is compulsory **5x2=10**

11. Define modern periodic law.

12. Mention the uses of deuterium.
13. Discuss the three types of Covalent hydrides.
14. State the first law of thermodynamics.
15. What is the usual definition of entropy? What is the unit of entropy?
16. State Le-Chatelier principle.
17. State law of mass action.
18. Write the IUPAC name for an element with atomic number 108 and 120?

PART- III

III. Answer any 6 questions.
Question No. 26 is compulsory **5x3=15**

19. State the trends in the variation of electronegativity in group and periods.
20. Ionisation potential of N is greater than that of O why?
21. What are isotopes? Write the names of isotopes of hydrogen.
22. Compare the structures of H_2O and H_2O_2.
23. What is lattice energy?
24. Identify the state and path functions out of the following:
    a) Enthalpy b) Entropy c) Heat d) Temperature
    e) Work f) Free energy.
25. Define Reaction Quotient
26. **Write the Kp and Kc for the following reactions.**
    1. $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$
    2. $2CO(g) \rightleftharpoons CO_2(g) + C(s)$

PART- IV

IV. Answer ALL the questions. 3x5=15

27. a) Explain the pauling method for the determination of ionic radius.
    (OR)
    b) i) How do you convert para hydrogen into ortho hydrogen ?
    ii) Explain why hydrogen is not placed with the halogen in the periodic table.
28. a) State the various statements of second law of hermodynamics.
    (OR)
    b) List the characteristics of Gibbs free energy.
29. a) Derive the relation between K_p and K_c.
    (OR)
    b) Derive a general expression for the equilibrium constant K_p and K_c for the reaction $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl2(g)$