MONTHLY TEST- AUGUST - 2024

12-Std   CHEMISTRY

Time : 1.30 hrs   Max.Marks : 50

PART - I

I. Choose the best answer: 10x1=10

1. The basicity of pyrophosphorous acid ($H_4P_2O_5$) is
   a) 4   b) 2   c) 3   d) 5

2. Which of the following is strongest acid among all?
   a) HI   b) HF   c) HBr   d) HCl

3. Hyponitrous acid formula is
   a) HOONO   b) $H_2N_2O_2$ c) HNO_2 d) HNO_4

4. Permanganate ion changes to ---------- in acidic medium
   a) MnO_4^{2-} b) Mn^{2+} c) Mn^{3+} d) MnO_2

5. Which of the following Lanthanoid ions is diamagnetic?
   a) Eu^{2+} b) Yb^{2+} c) Ce^{2+} d) Sm^{2+}

6. The addition of a catalyst during a chemical reaction alters which of the following quantities?
   a) Enthalpy   b) Activation energy
   c) Entropy   d) Internal energy

7. If the initial concentration of the reactant is doubled, the time for half reaction is also doubled. Then the order of the reaction is
   a) Zero   b) one   c) Fraction d) none

8. Which one of the followings is not a acidic buffer solution?
   a) $HClO_4$ and $NaClO_4$ b) CH_3COOH and CH_4COONa
   c) H_3PO_4 and Na_3PO_4 d) H_2CO_3 and Na_2CO_3

9. Which of these is not likely to act as Lewis base?
   a) BF_3 b) PF_3 c) CO   d) F^-

10. Dissociation constant of NH_4OH is 1.8×10^{-5} the hydrolysis constant of NH_4Cl would be
    a) 1.8×10^{-19} b) 5.55×10^{-10} c) 5.55×10^{-5} d) 1.80×10^{-5}

PART - II   5x2=10

II. Answer any five questions. Q.No 18 is compulsory

11. What is inert pair effect?

12. Chalcogens belongs to p-block. Give reason.   Che / 12 KK/ 1

13. Which is more stable? Fe^{3+} or Fe^{2+} - Explain.

14. What are interstitial compounds?

15. Calculate the pH of 0.04 M HNO_3 Solution.

16. Write Arrhenius equation and explains the terms involved.

17. What are Lewis acids and bases? Give two examples for each.

18. Identify the order for the following reactions

    (i) Rusting of Iron

    (ii) Radioactive disintegration of $_{92}U^{238}$

<div align="center">

PART - III   5x3=15

</div>

III. Answer any five questions. Q.No 26 is compulsory

19. Why fluorine is more reactive than other halogens?

20. What happens when PCl_5 is heated?

21. Explain why Cr^{2+} is strongly reducing while Mn^{3+} is strongly oxidizing.

22. Write Chromyl Chloride test.

23. Explain pseudo first order reaction with an example.

24. Distinguish between Order of the reaction and Molecularity of a reaction.

25. Explain common ion effect with an example

26. Find the solubility product of $BaSO_4$.

<div align="center">

PART - IV   3x5=15

</div>

IV. Answer all the questions

27. a) i) Give a reason to support that sulphuric acid is a dehydrating agent. (2)

     ii) $XeOF_4 + SiO_2 \rightarrow$? (3)

<div align="center">(OR)</div>

   b) Compare lanthanides and actinides. (5)

28. a) Derive integrated rate law for a first order reaction $A \rightarrow$ product (5)

<div align="center">(OR)</div>

   b) Explain briefly the collision theory of bimolecular reactions. (5)

29. a) Derive an expression for Ostwald's dilution law. (5)

<div align="center">(OR)</div>

   b) Derive Henderson - Hasselbalch equation. (5)

<div align="right">

Che / 12/ KK/ 2

</div>