

# 12 MONTHLY TEST- AUGUST - 2024

-Std

## CHEMISTRY

Time : 1.30 hrs

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Max.Marks : 50

### PART - I

I. Choose the best answer:

10x1=10

- The basicity of pyrophosphorous acid ( $\text{H}_4\text{P}_2\text{O}_5$ ) is  
a) 4                      b) 2                      c) 3                      d) 5
- Which of the following is strongest acid among all?  
a) HI                      b) HF                      c) HBr                      d) HCl
- Hyponitrous acid formula is  
a) HOONO              b)  $\text{H}_2\text{N}_2\text{O}_2$               c)  $\text{HNO}_2$               d)  $\text{HNO}_4$
- Permanganate ion changes to ----- in acidic medium  
a)  $\text{MnO}_4^{2-}$               b)  $\text{Mn}^{2+}$                       c)  $\text{Mn}^{3+}$               d)  $\text{MnO}_2$
- Which of the following Lanthanoid ions is diamagnetic?  
a)  $\text{Eu}^{2+}$                       b)  $\text{Yb}^{2+}$                       c)  $\text{Ce}^{2+}$               d)  $\text{Sm}^{2+}$
- 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
- 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
- Which one of the followings is not a acidic buffer solution?  
a)  $\text{HClO}_4$  and  $\text{NaClO}_4$                       b)  $\text{CH}_3\text{COOH}$  and  $\text{CH}_3\text{COONa}$   
c)  $\text{H}_3\text{PO}_4$  and  $\text{Na}_3\text{PO}_4$                       d)  $\text{H}_2\text{CO}_3$  and  $\text{Na}_2\text{CO}_3$
- Which of these is not likely to act as Lewis base?  
a)  $\text{BF}_3$                       b)  $\text{PF}_3$                       c) CO                      d)  $\text{F}^-$
- Dissociation constant of  $\text{NH}_4\text{OH}$  is  $1.8 \times 10^{-5}$  the hydrolysis constant of  $\text{NH}_4\text{Cl}$  would be  
a)  $1.8 \times 10^{-19}$               b)  $5.55 \times 10^{-10}$               c)  $5.55 \times 10^{-5}$               d)  $1.80 \times 10^{-5}$

### 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.

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13. Which is more stable?  $\text{Fe}^{3+}$  or  $\text{Fe}^{2+}$  - Explain.
14. What are interstitial compounds?
15. Calculate the pH of 0.04 M  $\text{HNO}_3$  Solution.
16. Write Arrhenius equation and explain 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  ${}_{92}\text{U}^{238}$

**PART - III****5x3=15****III. Answer any five questions. Q.No 26 is compulsory**

19. Why fluorine is more reactive than other halogens?
20. What happens when  $\text{PCl}_5$  is heated?
21. Explain why  $\text{Cr}^{2+}$  is strongly reducing while  $\text{Mn}^{3+}$  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  $\text{BaSO}_4$ .

**PART - IV****3x5=15****IV. Answer all the questions**

27. a) i) Give a reason to support that sulphuric acid is a dehydrating agent. (2)  
 ii)  $\text{XeOF}_4 + \text{SiO}_2 \rightarrow ?$  (3)  
 (OR)  
 b) Compare lanthanides and actinides. (5)
28. a) Derive integrated rate law for a first order reaction  $\text{A} \rightarrow \text{product}$  (5)  
 (OR)  
 b) Explain briefly the collision theory of bimolecular reactions. (5)
29. a) Derive an expression for Ostwald's dilution law. (5)  
 (OR)  
 b) Derive Henderson - Hasselbalch equation (5)

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