

**COMMON HALF YEARLY EXAMINATION – 2025**

**XII STD – CHEMISTRY ANSWER KEY**

**PART - I**

Q.NO	OPTION	ANSWER	Q.NO	OPTION	ANSWER
1	d	Both (a) and (c)	9	c	$6.022 \times 10^{22}$
2	d	$(\text{SiO}_4)^{4-}$	10	c	Liquid in gas
3	a	$\text{H}_3\text{PO}_3$	11	a	phenol
4	--	Mere attempt or 4.90BM or 4.89BM	12	d	Wolf Kishner reduction
5	c	$[\text{Fe}(\text{CO})_5]$	13	c	Schotten-Baumann reaction
6	a	Both assertion and reason are true and reason is the correct explanation of assertion	14	d	Vitamins
7	a	First order	15	a	Acetylsalicylic acid
8	b	Strongly acidic			

**PART - II**

Q.NO	Answer Key	Marks
16	Simple roasting of some of the ores give the crude metal without the use of reducing agents. (or) Chemical equation or explanation	2 mark
17	Diamond, Graphite, Fullerenes, Carbon nano tubes, Graphene Any 4 ----- 11/2 mark Any 3 ----- 11/2 mark Any 2 ----- 1 mark Any 1 ----- 1/2 mark	2 mark
18	Correct definition	2 mark
19	$\text{Zn}(\text{s}) + \text{CuSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu}(\text{s})$ ----- 2 mark (or) $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$ ----- 1 mark $\text{Cu} + 2\text{e}^- \rightarrow \text{Cu}(\text{s})$ ----- 1 mark	2 mark
20	The zigzag, random, continuous movement of the colloidal sol particles. (or) Any relevant explanation	2 mark
21	Compounds having same molecular formula but differ in the alkyl groups attached to the functional group (or) Any relevant definition ----- ----- 1 mark  Example ----- 1 mark	2 mark
22	Any 2 differences	2 mark
23	Correct equation (or) Correct explanation, with temperature and catalyst  Without temperature and catalyst ----- 1 mark	2 mark

24	$\text{Ag}_2\text{CrO}_4(\text{s}) \xrightleftharpoons{\text{H}_2\text{O}} 2\text{Ag}^+(\text{aq}) + \text{CrO}_4^{2-}(\text{aq})$	1 Mark	2 mark
	$K_{\text{sp}} = [\text{Ag}^+]^2[\text{CrO}_4^{2-}]$ $= (2s)^2(s)$ $K_{\text{sp}} = 4s^3$	1 Mark	

**PART - III**

25	Balanced equation (or) Correct explanation		3 mark
	UnBalanced equation (or) partly correct explanation	----- 1 mark	
26	Any 3 uses		3 mark
27	Correct definition (or) explanation	----- 3 mark	3 mark
	Formula only	----- 2 mark	
28	$\therefore \text{Number of atoms in a fcc unit cell} = \left(\frac{N_c}{8}\right) + \left(\frac{N_f}{2}\right)$ $= \left(\frac{8}{8} + \frac{6}{2}\right)$ $= (1 + 3)$ $= 4$	----- 1 mark ----- 1 mark ----- 1 mark	3 mark
29	Any 3 differences		3 mark
30	Correct definition (or) explanation	----- 2 mark	3 mark
	Example	----- 1 mark	
31	Balanced equation with catalyst	----- 3 mark	3 mark
	Without catalyst (or) Explanation only	----- 1 mark	
32	Correct definition (or) explanation	----- 2 mark	3 mark
	Example	----- 1 mark	
33	A : Aniline (or) Structure B : Benzenediazonium chloride (or) Structure C : Phenol (or) Structure	3 x 1 = 3	3 mark

**PART - IV**

34	a) Fractional crystallization	----- 1 mark	5 mark
	Explanation	----- 3 mark	
	Example	----- 1 mark	
	(or)		
	b) i) (1). $\text{BrF}_5 - sp^3d^2$ (2). $\text{BrF}_3 - sp^3d$	----- (1 + 1) mark	
	(1) $2\text{XeOF}_4 + \text{SiO}_2 \longrightarrow 2\text{XeO}_2\text{F}_2 + \text{SiF}_4$	----- 2 Mark	
	ii) (2) $\text{Xe} + 3\text{F}_2 \xrightarrow[400^\circ\text{C}]{\text{Ni}/200\text{ atm}} \text{XeF}_6$	----- 1 Mark	
35	a) Any 5 differences		5 mark
	(or)		
	b) 1) Central metal atom/ion : $\text{Pt}^{2+} / \text{Pt}^{\text{II}} / \text{Pt}$		
	2) Ligand(s) and their types: $\text{H}_2\text{O}, \text{NH}_3$ : Neutral ligand $\text{NO}_2$ : Negative ligand		
	3) Coordination entity : $[\text{Pt}(\text{NO}_2)(\text{H}_2\text{O})(\text{NH}_3)_2]^+$		

	<p>4) Oxidation number of the central metal ion: +2  5) Coordination number : 4  = 5</p>	5 x 1	
36	<p>a) Schottky defect : Explanation with diagram ----- 21/2 mark  Frenkel defect : Explanation with diagram ----- 21/2 mark</p> <p>(or)  b)</p> <p>A <math>\longrightarrow</math> product  Rate law can be expressed as  Rate = <math>k [A]^1</math> ----- 1 mark  Where, k is the first order rate constant.</p> $\frac{-d[A]}{dt} = k [A]^1$ $\Rightarrow \frac{-d[A]}{[A]} = k dt$ <p>----- 1 mark</p> <p>Integrate the above equation between the limits of time <math>t = 0</math> and time equal to <math>t</math>, while the concentration varies from the initial concentration <math>[A_0]</math> to <math>[A]</math> at the later time.</p> $\int_{[A_0]}^{[A]} \frac{-d[A]}{[A]} = k \int_0^t dt$ $(-\ln [A])_{[A_0]}^{[A]} = k(t)_0^t$ $-\ln [A] - (-\ln [A_0]) = k(t-0)$ $-\ln [A] + \ln [A_0] = kt$ $\ln \left( \frac{[A_0]}{[A]} \right) = kt$ <p>----- 1 mark</p> <p>This equation is in natural logarithm. To convert it into usual logarithm with base 10, we have to multiply the term by 2.303.</p> $2.303 \log \left( \frac{[A_0]}{[A]} \right) = kt$ $k = \frac{2.303}{t} \log \left( \frac{[A_0]}{[A]} \right)$ <p>----- 1 mark</p>	5 mark	
37	<p>a) i) Acid : Proton donor / Base : Proton acceptor (1 + 1) mark  ii) Correct definition ----- 2 mark  Example ----- 1 mark</p> <p>(or)</p> <p>b) i) Correct equation with catalyst ----- 11/2 mark  ii) Correct equation with catalyst ----- 2 mark  iii) Correct equation with catalyst ----- 11/2 mark</p>	5 mark	
38	<p>a) Reducing property of formic acid : Explanation ----- 3 mark  Structure ----- 1 mark  Equation any 1 ----- 1 mark</p> <p>(or)  b) Any 5 differences</p>	5 mark	