

SETHU BHASKARA MATRIC HR SEC. SCHOOL

①

XII - QUARTERLY EXAM - 2022

CHEMISTRY - ANSWER KEY

Q.No	KEY - WORDS	MARKS
1.	a) Al	1
2.	d) dry ice	1
3.	c) He	1
4.	d) Mn^{2+}	1
5.	c) Assertion is true. But reason is false	1
6.	c) 32%	1
7.	a) first order	1
8.	a) Bf_3	1
9.	a) phenol	1
10.	b) fehling's solution	1
11.	b) 2-methoxy propane	1
12.	b) 2.76	1
13.	c) both (a) and (b)	3
14.	b) $f = e^{-E_a/RT}$	1
15.	c) formaldehyde	1
<u>PART-II</u>		
16.	- does not explained rate of the reaction - DA is based on the assumption that the reactants are in equilibrium with product not always true	1 1

Q. No	KEY - WORDS	MARKS
17	<p><u>Ethyl Borate Test</u> $H_3BO_3 + 3C_2H_5OH \xrightarrow{conc\ H_2SO_4} B(OC_2H_5)_3 + 3H_2O$</p>	2
18	<p><u>Inert Pair Effect</u>: outer s electrons in heavier ^{post} Transition metals, have a tendency to remain inert and reluctance to take part in the bonding.</p>	2
19	<p>Fe^{3+} is more stable than Fe^{2+}</p>	1M
	<p>Fe^{3+} has $3d^5$ electronic configuration - Half-filled - more stable</p>	1M
20	<p><u>No of atoms in a fcc unit cell</u></p>	
	$= \frac{16}{8} + \frac{12}{2}$	1
	$= \frac{2}{8} + \frac{6}{2}$	1/2
	$= 1 + 3 = 4$	1/2
21	<p>(i) Decomposition of dinitrogen pentoxide</p>	1M
	$N_2O_5(g) \rightarrow 2NO_2(g) + \frac{1}{2}O_2(g)$	
22	<p>(ii) Decomposition of thionyl chloride</p>	1M
	$SO_2Cl_2 \rightarrow SO_2 + Cl_2$ <p>Corr, any two examples</p>	
22	<p><u>pH of a solution</u></p>	
	<p>Correct definition</p>	2M
	<p>Correct equation $pH = -\log_{10} [H_3O^+]$ only</p>	1M
23 24	<p>Kolbe reaction - Correct equation <u>Half-life time - Calculation</u></p>	2M
	$t_{1/2} = \frac{0.6932}{k}$	1
	$= \frac{0.6932}{1.54}$	1/2
	$= 450 \text{ seconds}$	1/2

Q. No	KEY - WORDS	Marks
	<u>PART-III</u>	
25.	Limestone act as a basic flux Silica gangue present in the ore is acidic Limestone combined with it forms Calcium silicate $\text{CaO} + \text{SiO}_2 \rightarrow \text{CaSiO}_3 (\text{s})$ <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">(s) flux</div> <div style="text-align: center;">(s) Gangue</div> <div style="text-align: center;">Slag</div> </div>	1M 1M 1M
26.	explanation with condition of Fisher Tropsh Synthesis any one reaction	1M 2M.
27.	<u>Uses of Helium</u> - any 2 uses	3M
28.	<u>Consequences of Lanthanide Contraction</u> (i) Basicity differences (ii) Similarities among Lanthanoids (iii) Elements of Second and third Transition Series resembles each other	1M 1M 1M
29.	<u>Frankel - defect</u> - Diagram - due to dislocation of ions from its crystal lattice. - ions occupied the interstitial position - Cation and anion differ in size - example AgBr.	1/2 1 1/2 1/2 1/2
30.	<u>Lowry - Bronsted - Acid & Base Theory.</u> Acid - Substance that has a tendency to donate proton to another substance. Base - has a tendency to accept proton (ex) $\text{HCl} + \text{H}_2\text{O} \rightleftharpoons \text{H}_3\text{O}^+ + \text{Cl}^-$	1M 1M 1M

Q. No.	KEY - words	(5)
35.	<p>a) (i) Sulphuric acid has strong affinity toward water and it it removes water from organic & inorganic compounds</p> $C_{12}H_{22}O_{11} + H_2SO_4 \rightarrow 12C + H_2SO_4 \cdot 11H_2O$ $HCOOH + H_2SO_4 \rightarrow CO + H_2SO_4 \cdot H_2O$ <p>(ii) Inter Halogen Compounds - Correct definition</p> <p style="text-align: center;">(or)</p> <p>(b) Comparison (differences) between Lanthanoids and Actinoids - any five</p>	<p>1M</p> <p>2M</p> <p>2M</p> <p>5M</p>
36	<p>(a) (i) Molecular Solids - Correct explanation</p> <p style="text-align: right;">- example (any one)</p> <p>(ii) Bragg's Eqn $n\lambda = 2d \sin \theta$</p> <p style="padding-left: 40px;">λ = wavelength of X-ray</p> <p style="padding-left: 40px;">θ = angle of diffraction</p> <p style="text-align: center;">(or)</p> <p>(b) Integrated rate law for a zero order - definition</p> <p style="padding-left: 40px;">Rate = $k[A]^0$</p> <p style="padding-left: 40px;">$-\frac{d[A]}{dt} = k$</p> <p style="padding-left: 40px;">$\Rightarrow -d[A] = k dt$</p> <p style="padding-left: 40px;">$\int_{[A]_0}^{[A]} d[A] = k \int_0^t dt$</p> <p style="padding-left: 40px;">$-([A]_{[A]_0} - [A]_0) = k (t - 0)$</p> <p style="padding-left: 40px;">$[A]_0 - [A] = kt$</p> <p style="padding-left: 40px;">$t = \frac{[A]_0 - [A]}{k}$</p>	<p>2M</p> <p>1M</p> <p>1</p> <p>1/2</p> <p>1/2</p> <p>1M</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1</p>

Q. No	Key - words	Marks
37	<p>a) Ostwald dilution Law - Statement</p> $K_a = \frac{\alpha^2 c}{1 - \alpha}$ $\alpha = \sqrt{\frac{K_a}{c}}$ $[H^+] = \sqrt{K_a c}$ <p>(b) Differences between Primary, Sec and Tertiary - Correct equations by using reagent of PI_2, Ag_2O_2, H_2O_2 and Kolt Test for primary alcohol - Red Second " - Blue Tertiary - No colour</p>	<p>1 2 1 1 5M</p>
38	<p><u>Cannizzaro reaction Mechanism:-</u></p> <p>General reaction is</p> $2 C_6H_5CHO \xrightarrow{50\% NaOH} C_6H_5CH_2OH + C_6H_5COONa$ <p><u>Mechanism</u> - 3 steps</p> <p>(or)</p>	<p>1M 4M</p>
	<p>(i) Kolbe's electrolytic decarboxylation - Statement</p> $2 CH_3COONa \xrightarrow{\text{electrolysis}} \begin{matrix} CH_3 \\ \\ CH_3 \end{matrix} + 2CO_2 + 2Na$	<p>1M 2M</p>
	<p>(ii) <u>Trans esterification</u></p> $CH_3-C(=O)-OC_2H_5 + HO-C_3H_7 \xrightleftharpoons{H^+} CH_3-C(=O)-C_3H_7 + C_2H_5OH$ <p>Ethyl acetate Propyl alcohol Propyl acetate</p>	<p>2M</p>

HANDLING TEACHERSSIGNATURE

1. MRS - SASIKALA. - J. S. fl 21/9/22
2. MR. EDWARD - W. D. 21/9/22
3. MRS. SINDHU. - S. S. 21/9/22
4. MR. RUDRAVEL. - S. R. 21/9/22
5. MRS. PRIYA. - P. 21/9/22
6. MR. NAUTHU - N. 21/9/22