

Set – (56/3/3)
MARKING SCHEME
SR. SECONDARY SCHOOL EXAMINATION, 2020
Subject: CHEMISTRY

Q.No	Expected Answer / Value Points	Distribution of Marks						
SECTION - A								
1.	Zn , Cd and Hg have completely filled d ¹⁰ configuration in their ground state as well as in their oxidized state.	1						
2.	Scandium / Sc	1						
3.	Because of multiple oxidation states / ability to form complexes / having large surface area.	1						
4.	Involvement of greater no. of electrons in inter atomic metallic bonding / strong metal-metal bonding.	1						
5.	Presence of unpaired e ⁻ showing d-d transition in Cu ²⁺ , while in Zn ²⁺ there is no unpaired electron / has d ¹⁰ configuration.	1						
6.	Iodobenzene	1						
7.	N-Phenylethanamide	1						
8.	Zn	1						
9.	B ₆ / Pyridoxine	1						
10.	Bithional	1						
11.	(C)	1						
12.	(C)	1						
13.	(B)	1						
14.	(D)	1						
15.	(A)	1						
16.	(ii)	1						
17.	(i)	1						
18.	(iii)	1						
19.	(iv)	1						
20.	(i)	1						
SECTION – B								
21.	i) Acts as solvent / lowers the melting point of the mixture / Increases the conductivity. ii) It forms a volatile compound Ni(CO) ₄ , which decomposes at higher temperature to give pure Nickel. <p style="text-align: center;">OR</p> $\text{Al}_2\text{O}_3 + 2 \text{NaOH} + 3\text{H}_2\text{O} \rightarrow 2 \text{Na} [\text{Al}(\text{OH})_4]$ $2\text{Na} [\text{Al}(\text{OH})_4] + \text{CO}_2 \rightarrow \text{Al}_2\text{O}_3 \cdot x\text{H}_2\text{O} + 2 \text{NaHCO}_3$ $\text{Al}_2\text{O}_3 \cdot x\text{H}_2\text{O} \xrightarrow{\Delta} \text{Al}_2\text{O}_3 + x\text{H}_2\text{O}$	1 1 1 ½ ½						
22.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #f08080;"> <th style="text-align: center; padding: 5px;">Physisorption</th> <th style="text-align: center; padding: 5px;">Chemisorption</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">1. It arises because of van der Waals' forces.</td> <td style="padding: 5px;">1. It is caused by chemical bond formation.</td> </tr> <tr> <td style="padding: 5px;">2. It is not specific in nature.</td> <td style="padding: 5px;">2. It is highly specific in nature.</td> </tr> </tbody> </table> <p style="text-align: center;">(or any other two correct differences)</p> <p style="text-align: center;">OR</p>	Physisorption	Chemisorption	1. It arises because of van der Waals' forces.	1. It is caused by chemical bond formation.	2. It is not specific in nature.	2. It is highly specific in nature.	1 1
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22.	<p>i) There are some substances which at low concentration behave as normal strong electrolytes, but at higher concentration exhibit colloidal behavior due to the formation of aggregates. Example: Micelles / soap</p> <p>ii) Oil is dispersed phase and water is dispersion medium. Example : Milk (or any other correct example)</p>	<p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p>
23.	<p>Rate = $-\frac{\Delta[A]}{\Delta t} = -\frac{1}{3} \frac{\Delta[B]}{\Delta t} = \frac{1}{2} \frac{\Delta[C]}{\Delta t}$</p> <p>(i) Rate = $\frac{1}{2} \frac{\Delta[C]}{\Delta t}$ $2 \times \text{Rate} = \frac{\Delta[C]}{\Delta t} = 2.5 \times 10^{-4}$ Rate = $\frac{2.5 \times 10^{-4}}{2} = 1.25 \times 10^{-4} \text{ mol l}^{-1} \text{ s}^{-1}$</p> <p>(ii) Rate = $-\frac{1}{3} \frac{\Delta[B]}{\Delta t}$ $1.25 \times 10^{-4} = -\frac{1}{3} \frac{\Delta[B]}{\Delta t}$ $-\frac{\Delta[B]}{\Delta t} = 3 \times 1.25 \times 10^{-4} = 3.75 \times 10^{-4} \text{ mol l}^{-1} \text{ s}^{-1}$</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>
24.	<p>i) Chemical compounds which reduce or abolish pain Example: aspirin / paracetamol. (or any other suitable example)</p> <p>ii) Quaternary ammonium salts with acetate / chloride / bromide Example: cetyltrimethylammonium bromide. (or any other suitable example)</p>	<p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p>
25.	<p>(a) On adding AgNO_3, $[\text{Co}(\text{NH}_3)_5(\text{SO}_4)]\text{Cl}$ will give white ppt of AgCl but $[\text{Co}(\text{NH}_3)_5\text{Cl}] \text{SO}_4$ doesn't / On adding BaCl_2, $[\text{Co}(\text{NH}_3)_5\text{Cl}] \text{SO}_4$ will give white ppt of BaSO_4 but $[\text{Co}(\text{NH}_3)_5(\text{SO}_4)]\text{Cl}$ doesn't.</p> <p>(b) $\text{K}_3[\text{Cr}(\text{C}_2\text{O}_4)_3] / \text{K}_3[\text{Cr}(\text{ox})_3]$</p>	<p>1</p> <p>1</p>
26.	<p>a) The pentaacetate of glucose does not react with hydroxylamine / HCN / Schiff's reagent indicating the absence of free $-\text{CHO}$ group.</p> <p>b) Adenine, Guanine, Uracil and Cytosine Uracil</p>	<p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>
27.	<p>$6\text{XeF}_4 + 12 \text{H}_2\text{O} \rightarrow 4\text{Xe} + 2\text{XeO}_3 + 24\text{HF} + 3\text{O}_2$</p> <p>Yes Xe^{+4} changes to Xe^0 and Xe^{+6} / Xe gets oxidized as well as reduced in the same reaction.</p>	<p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>
28.	<p>a.</p> <p>$\text{CH}_3\text{-CH}_2\text{-}\ddot{\text{O}}\text{-H} + \text{H}^+ \rightarrow \text{CH}_3\text{-CH}_2\text{-}\overset{\text{H}}{\overset{+}{\text{O}}}\text{-H}$</p> <p>$\text{CH}_3\text{CH}_2\text{-}\ddot{\text{O}}\text{:} + \text{CH}_3\text{-CH}_2\text{-}\overset{\text{H}}{\overset{+}{\text{O}}}\text{-H} \rightarrow \text{CH}_3\text{CH}_2\text{-}\overset{\text{H}}{\overset{+}{\text{O}}}\text{-CH}_2\text{CH}_3 + \text{H}_2\text{O}$</p> <p>$\text{CH}_3\text{CH}_2\text{-}\overset{\text{H}}{\overset{+}{\text{O}}}\text{-CH}_2\text{CH}_3 \rightarrow \text{CH}_3\text{CH}_2\text{-O-CH}_2\text{CH}_3 + \text{H}^+$</p>	<p>$\frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p>

