

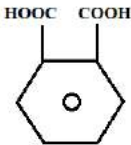
# CBSE Class 12 Chemistry Question Paper 2020 Solution Set 1


CHEMISTRY STANDARD SOLVED

SET 1 (CODE: 30/5/1) SERIES: JBB/5

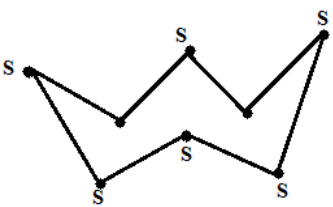
Q. NO	SOLUTION	TOTAL MARKS
SECTION – A		
1.	Organic compounds with $-NH_2$ and COOH group are known as amino acids	1
2.	Due to the formation of zwitter ion	1
3.	Acidic amino acids have more $-COOH$ groups and basic amino acids have more $NH_2$ groups	1
4.	These are not synthesized by body to be supplied in diet.	1
5.	Peptide linkage	1
6.	Leaching	1
7.	Zinc	1
8.	Linkage and ionisation isomerism	1
9.	Desorption	1
10.	Order is two	1
11.	(D) 2.0 M	1
12.	(A) reduced form is more stable compared to hydrogen gas.	1
13.	(D) 5	1
14.	(A) They are chemically reactive	1
15.	(C) 2-Methyl butan-2-ol	1
16.	(i) Both assertion (A) and reason (R) are correct statements, and reason (R) is the correct explanation of the assertion (A).	1

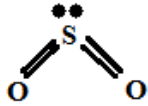
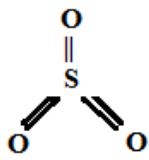
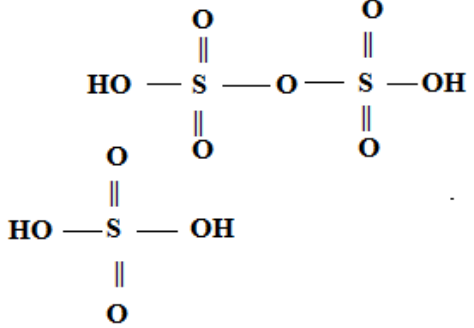
17.	(i) Both assertion (A) and reason (R) are correct statements, and reason (R) is the correct explanation of the assertion (A).	1
18.	(iii) Assertion (A) is correct, but reason (R) is incorrect statement.	1
19.	(iii) Assertion (A) is correct, but reason (R) is incorrect statement.	1
20.	(i) Both assertion (A) and reason (R) are correct statements, and reason (R) is the correct explanation of the assertion (A).	1
<b>SECTION – B</b>		
21.	<p>Tranquilizers reduces the mental stress and acts as a part of anti depressants  Eg: Barbituaric acid derivatives  Analgesics: These are pain killers  Eg: Aspirin</p> <p>b) Antiseptics reduces bacterial growth on animate object  Disinfectants controls bacterial growth or non animate objects</p> <p style="text-align: center;"><b>OR</b></p> <p>In cationic detergents cation acts an detergent  Eg: Cetyl trimethyl ammonium bromide.  In Anionic detergents, anion acts as detergent  Eg: Sodium lauryl sulphate</p>	<p>2</p> <p>1</p> <p>1</p>
22.	<p>a) Due to intermolecular H-bonding in alcohol  b) Due to resonance C = O is attained in phenol</p>	2
23.	<p>a) <math>2MnO_4^- + H_2O + I^- \longrightarrow 2MnO_2 + 2OH^- + IO_3^-</math>  b) <math>2MnO_4^- + 16H^+ + 10I^- \longrightarrow 2Mn^{+2} + 8H_2O + 5I_2</math></p>	<p>1</p> <p>1</p>
24.	<p>The curves obtained by plotting fraction of gas adsorbed Verses pressure at constant temperature is known as adsorption isotherm</p> $\frac{x}{m} = k.p^{\frac{1}{n}}$	2

	<p><math>x \rightarrow</math> mass of adsorbate</p> <p><math>m \rightarrow</math> mass of adsorbant</p> <p style="text-align: center;"><b>OR</b></p> <p>Shape selective catalysis</p> <p>Catalyst activity depends upon shape &amp; size of pores present in the catalyst. ZSM5 is used to convert ethanol to gasoline.</p>	
25.	<p>Rate <math>\propto [A]^1</math>; rate <math>\propto [B]^1</math></p> <p>Average rate is measured in average interval of time and instantaneous rate is measured in an instant of time.</p>	2
26.	<p><math>Mg   Mg^{+2}    Ag^+   Ag</math></p> $E = E_0 - \frac{0.059}{2} \log \frac{[Mg^{+2}]}{[Ag^+]}$	2
27.	<p>a) Solute dissociates</p> <p>b) solute associates</p>	2
<b>SECTION – C</b>		
28.	<p>a) Teflon</p> <p><math>CF_2 = CF_2</math></p> <p>b) glyptal</p> <div style="display: flex; align-items: center; justify-content: space-around;"> <div style="text-align: center;"> <math display="block">\begin{array}{c} CH_2OH \\   \\ CH_2OH \end{array}</math> <p>Ethylene glycol</p> </div> <div style="text-align: center;">  </div> </div> <p>c) Nylon – 6</p> <p>caprolactum</p> <p style="text-align: center;"><b>OR</b></p>	<p>1</p> <p>1</p> <p>1</p>

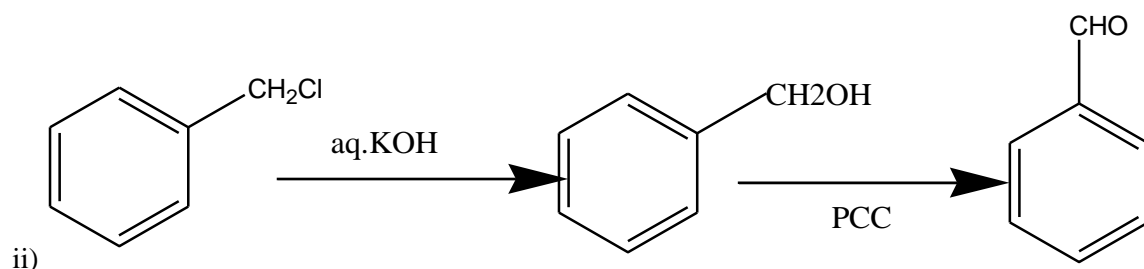
	<p>i) <math>NH_2-(CH_2)_6-NH_2</math> hexamethylene diamine, <math>\begin{array}{c} COOH \\   \\ (CH_2)_4-COOH \end{array}</math> Adipic acid</p> <p>ii) <math>CH_2=CH-CH=CH_2</math></p> <p>1,3 – butadiene</p> <p>iii)</p> <p><math>CH_2=C-CH=CH_2</math></p> <p><math>\begin{array}{c}   \\ Cl \end{array}</math></p> <p>2-chloro-1,3-butadiene</p> <p><math>CH=CH_2</math></p>  <p>Styrene</p>	
29.	<p>a) Due to +R effecting <math>NH_2</math> group ion electrons are not localized</p> <p>b) Since aniline form a salt with lewis and <math>AlCl_3</math></p> <p>c) Since Aryl halide are less reactive towards nucleophilic substitution reaction</p>	3
30.	<p>a) 2-bromo-2-methyl propane &gt; 2-bromo butane &gt; 1-bromobutane</p> <p>b) 1-bromo butane &gt; 2-bromo butane &gt; 2-bromo-2-methyl propane</p>	3
31.	<p>a) Potassium hexa cyanido manganate (II)</p> <p><math>Mn^{+2}</math> is <math>[Ar]3d^5</math></p> <p><math>t_2g^5 eg^0</math></p> <p>b) Stability of complexes increases due to presence of bidentate ligands</p> <p>eg: <math>[Co(en)_3]^{+3}</math></p> <p>[OR]</p> <p>i) <math>[Fe(CN)_6]^{-4}</math></p> <p><math>d^2 sp^3</math> – diamagnetic</p> <p>ii) <math>[Co F_6]^{-3}</math></p> <p><math>sp^3 d^2</math> – Paramagnetic</p>	3

	iii) $[Ni(CO)_4]$ $sp^3$ – diamagnetic	
32.	$Al_2O_3 + 2NaOH + 3H_2O \longrightarrow 2NaAl(OH)_4$ $2NaAl(OH)_4 + CO_2 \longrightarrow Al_2O_3 \cdot X H_2O$ $Al_2O_3 \cdot XH_2O \longrightarrow Al_2O_3 + XH_2O$	3
33.	$\Lambda_m = \frac{K \times 1000}{C_4}$ $= \frac{8 \times 10^{-5} \times 10^3}{2 \times 10^{-3}} = 40 \text{ } s \text{ } cm^2 \text{ } mol^{-1}$ degree of dissociation = $40/404 = 0.099$	3
34.	$\Delta T_f = \frac{K_f \times \omega \times 1000}{GM \omega \times \omega}$ $= \frac{1.86 \times 31 \times 1000}{62 \times 600}$ $= \frac{18.6}{12} = 1.55$ Freezing point = $273 - 1.55$ $= 271.45 \text{ K}$	3
<b>SECTION – D</b>		
35.	a) i) Zero order ii) Rate constant iii) $\text{mol L}^{-1} \text{ s}^{-1}$ b) $K = \frac{2.303}{25} \log_{10} \frac{100}{75}$ $K = \frac{2.303}{25} \times (\log 4 - \log 3)$ $K = \frac{2.303 \times 0.1249}{25} = \frac{0.2976}{25} = 1.15 \times 10^{-2} \text{ } mol^{-1}$	1 1 1 1 1

	$= \frac{0.693}{K}$ $= \frac{0.693}{0.0115}$ $= 60.2 \text{ min}$ <p style="text-align: center;">[OR]</p> <p>a) <math>t_{1/2} = \frac{0.693}{K} = \frac{0.691}{60} = 0.0115</math> <span style="float: right;">1</span></p> $1 \xrightarrow{0.0115} \frac{1}{2} \xrightarrow{0.0115} \frac{1}{4} \xrightarrow{0.0115} \frac{1}{8} \xrightarrow{0.0115} \frac{1}{16}$ $= 4 \times t_{1/2}$ $= 4 \times 0.0115$ $= 0.046 \text{ s}^{-1}$ <p>b) i) concentration of reactants <span style="float: right;">1</span></p> <p>ii) temperature <span style="float: right;">1</span></p> <p>c) i) greater than or equal to threshold energy <span style="float: right;">1</span></p> <p>ii) lesser activation emerge barriers</p>	
36.	<p>a) A → Sulphur</p>  <p>B → SO<sub>2</sub></p> <p>C → SO<sub>3</sub></p> <p>D → H<sub>2</sub>S<sub>2</sub>O<sub>7</sub></p> <p>E → H<sub>2</sub>SO<sub>4</sub></p> <p>F → CuSO<sub>4</sub></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>

	<div style="text-align: center;">        </div> <p>b) <math>Cu + 2H_2SO_4 \longrightarrow CuSO_4 + 2H_2O + SO_2</math></p> <p>c) i) In the preparation of fertilizers ii) Paper industry</p> <p style="text-align: center;">[OR]</p> <p>a) due to high electronegativity and positive SRP      1</p> <p>b) Due to very weak vander waal's forces.      1</p> <p>iii) Due to smaller size of 'O'      1</p> <p>b) <math>2NaOH + Cl_2 \longrightarrow NaCl + NaOCl + H_2O</math>      1</p> <p><math>2I^- + H_2O + O_3 \longrightarrow I_2 + 2OH^- + O_2</math>      1</p>	
37.	<p>a) i) <math>CH_3CH_2COCH_2CH_3</math> 3-pentanone</p> <p>ii) <math>CH_3CH_2COCH_2CH_3 \xrightarrow[HCl]{Zn-Hg} CH_3CH_2CH_2CH_2CH_3</math> n-pentane</p> <p style="text-align: center;"><math>CH_3CH - COOH</math></p> <p>b) i) <math>CH_3CH_2COOH \xrightarrow[red P]{Br_2} \begin{array}{c}   \\ Br \end{array}</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>

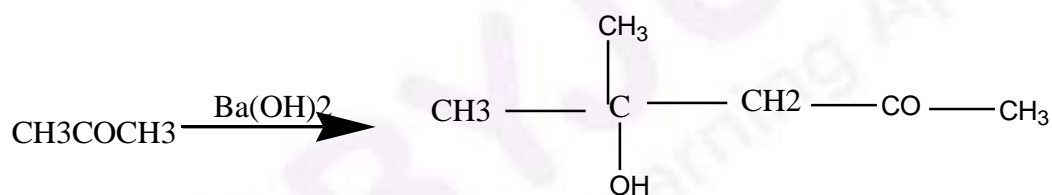
(HVZ reaction 2 – bromo propanoic acid)



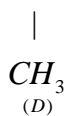
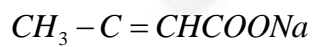
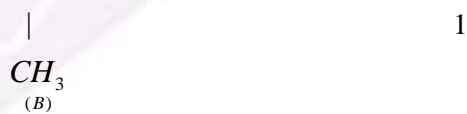
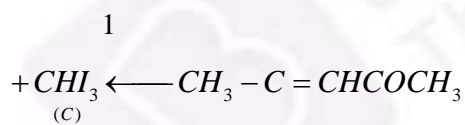
c) i) Benzaldehyde does not give iodoform reaction while Acetaldehyde responds to iodoform

(OR)

(i)



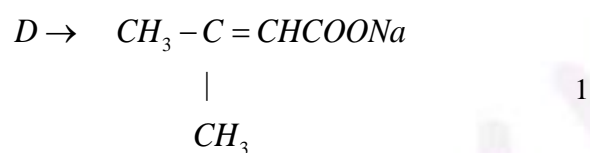
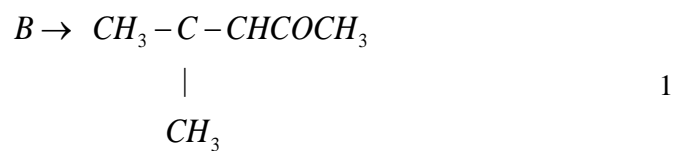
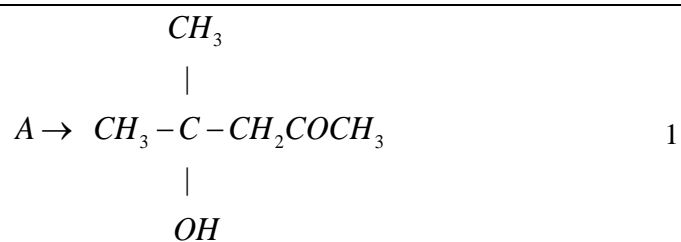
A



1

(ii)





iii) 4-hydroxy-4-methyl-2-pentanone

b) i) Ethanol does not give reaction with  $\text{NaHSO}_3$  while propanone give PPT with  $\text{NaHCO}_3$

ii) Benzoic acid give violet colour with  $\text{FeCl}_3$  1