EDUGROSS
WISDOMISING KNOWLEDGE

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 bhutan-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
	SECTION – B	
21.	Tranquilizers reduces the mental stress and acts as a part of anti depressants Eg: Barbituaric acid derivatives Analgesics: These are pain killers Eg: Aspirin b) Antiseptics reduces bacterial growth on animate object Disinfectants controls bacterial growth or non animate objects **OR** In cationic detergents cation acts an detergent Eg: Cetyl trimethyl ammonium bromide. In Anionic detergents, anion acts as detergent Eg: Sodium lauryl sulphate	2 1 1
22.	a) Due to intermolecular H-bonding in alcohol b) Due to resonance C = O is attained in phenol	2
23.	a) $2MnO_4^- + H_2O + I^- \longrightarrow 2MnO_2 + 2OH^- + IO_3^-$ b) $2MnO_4^- + 16H^+ + 10I^- \longrightarrow 2Mn^{+2} + 8H_2O + 5I_2$	1 1
24.	The curves obtained by plotting fraction of gas adsorbed Verses pressure at constant temperature is known as adsorption isotherm $$\frac{x}{m} = k.p^{\frac{1}{n}}$$	2

25.	$x \rightarrow$ mass of adsorbate	
	$m \rightarrow$ mass of adsorbant	
	OR	
	Shape selective catalysis	
	Catalyst activity depends upon shape & size of pores present in the catalyst. ZSM5 is used to convert ethanol to gasoline.	
25.	Rate $\propto [A]^1$; rate $\propto [B]^1$	2
	Average rate is measured in average interval of time and instantaneous rate is measured in an instant of time.	
26.	$Mg \mid Mg^{+2} \parallel Ag^+ \mid Ag$	2
	$E = E_0 - \dfrac{0.059}{2} \log \dfrac{\left[Mg^{+2}\right]}{\left[Ag^+\right]}$	
27.	a) Solute dissociates	2
	b) solute associates	
	SECTION – C	
28.	a) Teflon	1
	$CF_2 = CF_2$	
	b) glyptal	
	CH_2OH	
	$\mid$	1
	CH_2OH	
	Ethylene glycol	
	c) Nylon – 6	
	caprolactum	1
	OR	

i) $NH_2-(CH_2)_6-NH_2$ hexamethylene diamine, $\begin{array}{c}COOH \\ | \\ (CH_2)_4-COOH\end{array}$ Adipic acid

ii) $CH_2=CH-CH=CH_2$

1,3 – butadiene

Styrene

iii)

$$CH_2=C-CH=CH_2$$
$$\quad\quad |$$
$$\quad\quad Cl$$

2-chloro-1,3-butadiene

29.	a) Due to +R effecting NH$_2$ group ion electrons are not localized	3
	b) Since aniline form a salt with lewis and AlCl$_3$	
	c) Since Aryl halide are less reactive towards nucleophilic substitution reaction	
30.	a) 2-bromo-2-methyl propane > 2-bromo butane > 1-bromobutane	3
	b) 1-bromo butane > 2-bromo butane > 2-bromo-2-methyl propane	
31.	a) Potassium hexa cyanido manganate (II)	3
	$Mn^{+2} is[Ar]3d^5$	
	$t_2g^5 eg^0$	
	b) Stability of complexes increases due to presence of bidentate ligands	
	eg:[Co(en)3]$^{+3}$	
	[OR]	
	i) $[Fe(CN)_6]^{-4}$	
	d^2sp^3 – diamagnetic	
	ii) $[CO\ F_6]^{-3}$	
	sp^3d^2 – Paramagnetic	

	iii) $\left[Ni(CO)_4 \right]$ $sp^3 -$ diamagnetic	
32.	$Al_2O_3 + 2NaOH + 3H_2O \longrightarrow 2NaAl(OH)_4$ $2NaAl(OH)_4 + CO_2 \longrightarrow Al_2O_3.X\ H_2O$ $Al_2O_3.XH_2O \longrightarrow Al_2O_3 + XH_2O$	3
33.	$\Lambda_m = \dfrac{K \times 1000}{C_4}$ $= \dfrac{8 \times 10^{-5} \times 10^3}{2 \times 10^{-3}} = 40\ s\,cm^2\,mol^{-1}$ degree of dissociation$=40/404=0.099$	3
34.	$\Delta T_f = \dfrac{K_f \times \omega \times 1000}{GM\omega \times \omega}$ $= \dfrac{1.86 \times 31 \times 1000}{62 \times 600}$ $= \dfrac{18.6}{12} = 1.55$ Freezing point $= 273 - 1.55$ $\qquad\qquad\qquad = 271.\ 45\ K$	3
	SECTION – D	
35.	a) i) Zero order ii) Rate constant iii) mol L^{-1} s^{-1} b) $K = \dfrac{2.303}{25} \log_{10} \dfrac{100}{75}$ $K = \dfrac{2.303}{25} \times (\log 4 - \log 3)$ $K = \dfrac{2.303 \times 0.1249}{25} = \dfrac{0.2976}{25} = 1.15 \times 10^{-2}\ mol^{-1}$	1 1 1 1 1

$$= \frac{0.693}{K}$$

$$= \frac{0.693}{0.0115}$$

$$= 60.2 \, \text{min}$$

[OR]

a) $t_{1/2} = \frac{0.693}{K} = \frac{0.691}{60} = 0.0115$ 1

$$\underset{0.0115}{1 \, \text{—}} \, \underset{0.0115}{\frac{1}{2} \, \text{—}} \, \underset{0.0115}{\frac{1}{4} \, \text{—}} \, \underset{0.0115}{\frac{1}{8} \, \text{—}} \, \frac{1}{16}$$

$$= 4 \times t_{1/2}$$ 1

$$= 4 \times 0.0115$$

$$= 0.046 \, s^{-1}$$

b) i) concentration of reactants   1

ii) temperature   1

c) i) greater than or equal to threshold energy   1

ii) lesser activation emerge barriers
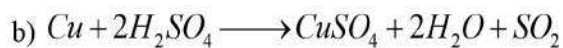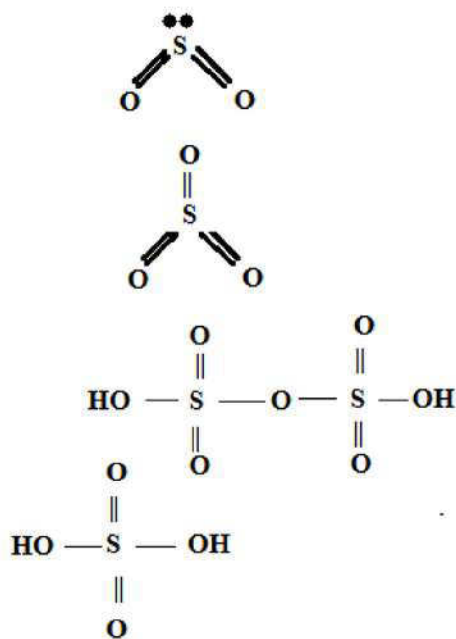
---
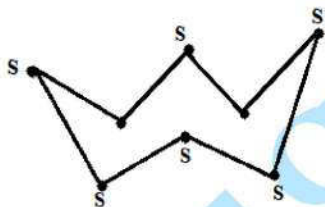
36.   a) A → Sulphur   1

B → SO_2

C → SO_3

D → $H_2S_2O_7$

E → H_2SO_4

F → $CuSO_4$

b) $Cu + 2H_2SO_4 \longrightarrow CuSO_4 + 2H_2O + SO_2$

c) i) In the preparation of fertilizers
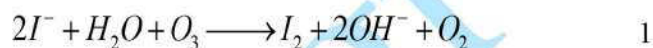
ii) Paper industry

[OR]

a) due to high electronegativity and positive SRP   1
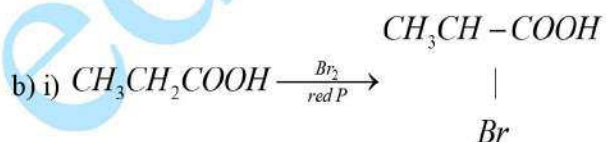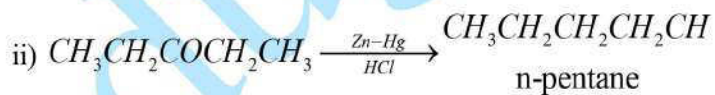
b) Due to very weak vander waal's forces.   1

iii) Due to smaller size of 'O'   1

b) $2NaOH + Cl_2 \longrightarrow NaCl + NaOCl + H_2O$ 1

$2I^- + H_2O + O_3 \longrightarrow I_2 + 2OH^- + O_2$ 1

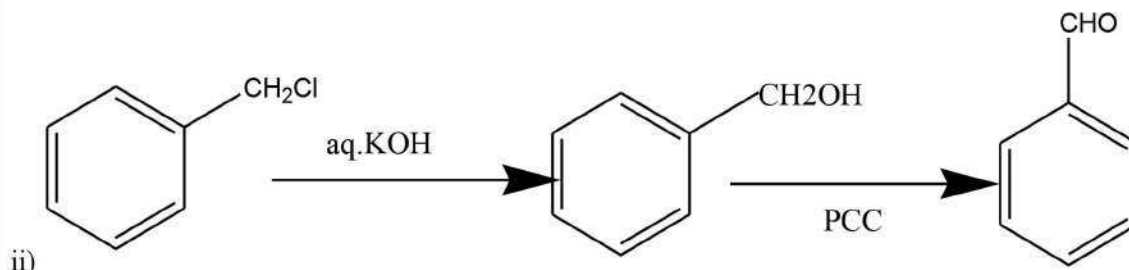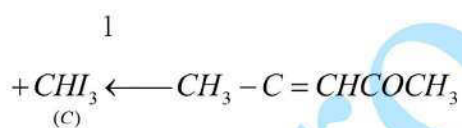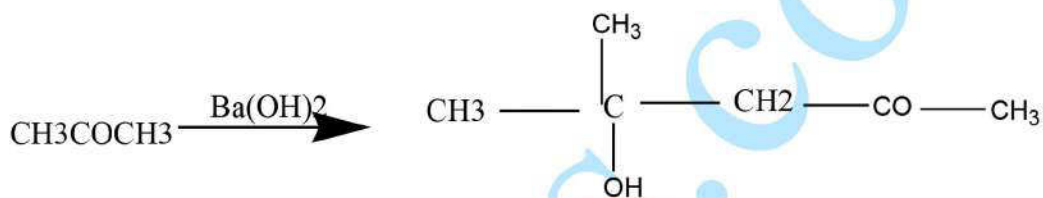| 37. | a) i) $CH_3CH_2COCH_2CH_3$ | 1 |
	3-penetanone	1
	ii) $CH_3CH_2COCH_2CH_3 \xrightarrow[HCl]{Zn-Hg} CH_3CH_2CH_2CH_2CH$ n-pentane	1
	b) i) $CH_3CH_2COOH \xrightarrow[red\ P]{Br_2}$ $CH_3CH-COOH$ | Br	1
		1

(HVZ reaction   2 – bromo propanoic acid)

ii)

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

(OR)

(i)

$$+ CHI_3 \longleftarrow CH_3 - C = CHCOCH_3$$
$$(C)$$
$$\mid$$
$$CH_3$$
$$(B)$$

$$CH_3 - C = CHCOONa$$
$$\mid$$
$$CH_3$$
$$(D)$$

(ii)

$$A \rightarrow \overset{\displaystyle CH_3}{\underset{\displaystyle OH}{\overset{\displaystyle |}{\underset{\displaystyle |}{CH_3 - C - CH_2COCH_3}}}} \qquad 1$$

$$B \rightarrow \underset{\displaystyle CH_3}{\overset{\displaystyle |}{CH_3 - C - CHCOCH_3}} \qquad 1$$

$$C \rightarrow CHI_3 \qquad 1$$

$$D \rightarrow \underset{\displaystyle CH_3}{\overset{\displaystyle |}{CH_3 - C = CHCOONa}} \qquad 1$$

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

b) i) Ethanol does not give reaction with $NaHSO_3$ while propanone give PPT with $NaHCO_3$

ii) Benzoic acid give violet colour with $FeCl_3$ 1