

# JEE (Main) CHEMISTRY SOLVED PAPER

2022  
29<sup>th</sup> June Shift 1

Time : 1 Hour

Total Marks : 100

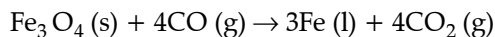
## General Instructions :

1. In Chemistry Section, there are 30 Questions (Q. no. 1 to 30) having Section A and B.
2. Section A consists of 20 multiple choice questions & Section B consists of 10 numerical value type questions. In Section B, candidates have to attempt any five questions out of 10.
3. There will be only one correct choice in the given four choices in Section A. For each question for Section A, 4 marks will be awarded for correct choice, 1 mark will be deducted for incorrect choice questions and zero mark will be awarded for not attempted question.
4. For Section B questions, 4 marks will be awarded for correct answer and zero for unattempted and incorrect answer.
5. Any textual, printed or written material, mobile phones, calculator etc. is not allowed for the students appearing for the test.
6. All calculations / written work should be done in the rough sheet is provided with Question Paper.

## Chemistry

### Section A

- Q. 1.** Production of iron in blast furnace follows the following equation :



When 4.640 kg of  $\text{Fe}_3\text{O}_4$  and 2.520 kg of CO are allowed to react then the amount of iron (in g) produced is :

[Given : Molar Atomic mass ( $\text{g mol}^{-1}$ ) : Fe = 56

Molar Atomic mass ( $\text{g mol}^{-1}$ ) : O = 16

Molar Atomic mass ( $\text{g mol}^{-1}$ ) : C = 12]

- (A) 1400                      (B) 2200  
(C) 3360                      (D) 4200
- Q. 2.** Which of the following statements are correct ?
- (a) The electronic configuration of Cr is (Ar)  $3d^5 4s^1$ .
- (b) The magnetic quantum number may have a negative value.
- (c) In the ground state of an atom, the orbitals are filled in order of their increasing energies.
- (d) The total number of nodes are given by  $n - 2$ .

Choose the **most appropriate** answer from the options given below :

- (A) (a), (c) and (d) only  
(B) (a) and (b) only  
(C) (a) and (c) only  
(D) (a), (b) and (c) only

- Q. 3.** Arrange the following in the decreasing order of their covalent character ?

(A) LiCl                      (B) NaCl  
(C) KCl                      (D) CsCl

Choose the **most appropriate** answer from the options given below :

- (A) (A) > (C) > (B) > (D)  
(B) (B) > (A) > (C) > (D)  
(C) (A) > (B) > (C) > (D)  
(D) (A) > (B) > (D) > (C)

- Q. 4.** The solubility of AgCl will be maximum in which of the following ?

(A) 0.01 M KCl              (B) 0.01 M HCl  
(C) 0.01 M AgNO<sub>3</sub>        (D) Deionised water

- Q. 5.** Which of the following is a **correct** statement ?

- (A) Brownian motion destabilises sols.  
(B) Any amount of the dispersed phase can be added to emulsion without destabilising it.  
(C) Mixing two oppositely charged sols in equal amount neutralises charges and stabilises colloids.  
(D) Presence of equal and similar charges on colloidal particles provides stability to the colloidal solutions.

- Q. 6.** The electronic configuration of Pt (atomic number 78) is :

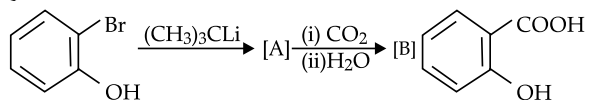
(A)  $[\text{Xe}] 4f^{14} 5f^9 6s^1$         (B)  $[\text{Kr}] 4f^{14} 5f^{10}$   
(C)  $[\text{Xe}] 4f^{14} 5d^{10}$         (D)  $[\text{Xe}] 4f^{14} 5d^8 6s^2$

- Q. 7.** In isolation of which one of the following metals from their ores, the use of cyanide salt is not commonly involved ?

- (A) Zinc (B) Gold  
(C) Silver (D) Copper
- Q. 8. Which one of the following reactions indicated the reducing ability of hydrogen peroxide in basic medium ?  
(A)  $\text{HOCl} + \text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O}^+ + \text{Cl}^- + \text{O}_2$   
(B)  $\text{PbS} + 4\text{H}_2\text{O}_2 \rightarrow \text{PbSO}_4 + 4\text{H}_2\text{O}$   
(C)  $2\text{MnO}_4^- + 3\text{H}_2\text{O}_2 \rightarrow 2\text{MnO}_2 + 3\text{O}_2 + 2\text{H}_2\text{O} + 2\text{OH}^-$   
(D)  $\text{Mn}^{2+} + \text{H}_2\text{O}_2 \rightarrow \text{Mn}^{4+} + 2\text{OH}^-$
- Q. 9. Match List-I with List-II.
- | List-I  | List-II                         |
|---------|---------------------------------|
| (Metal) | (Emitted light wavelength (nm)) |
| (a) Li  | (I) 670.8                       |
| (b) Na  | (II) 589.2                      |
| (c) Rb  | (III) 780.0                     |
| (d) Cs  | (IV) 455.5                      |
- Choose the **most appropriated** answer from the options given below :  
(A) (a)-(I), (b)-(II), (c)-(III), (d)-(IV)  
(B) (a)-(III), (b)-(II), (c)-(I), (d)-(IV)  
(C) (a)-(III), (b)-(I), (c)-(II), (d)-(IV)  
(D) (a)-(IV), (b)-(II), (c)-(I), (d)-(III)
- Q. 10. Match List-I with List-II.
- | List-I  | List-II                          |
|---------|----------------------------------|
| (Metal) | (Application)                    |
| (a) Cs  | (I) High temperature thermometer |
| (b) Ga  | (II) Water repellent sprays      |
| (c) B   | (III) Photoelectric cells        |
| (d) Si  | (IV) Bullet proof vest           |
- Choose the **most appropriated** answer from the options given below :  
(A) (a)-(III), (b)-(I), (c)-(IV), (d)-(II)  
(B) (a)-(IV), (b)-(III), (c)-(II), (d)-(I)  
(C) (a)-(II), (b)-(III), (c)-(IV), (d)-(I)  
(D) (a)-(I), (b)-(IV), (c)-(II), (d)-(III)
- Q. 11. The oxoacid of phosphorus that is easily obtained from a reaction of alkali and white phosphorus and has two P-H bonds, is :  
(A) Phosphonic acid  
(B) Phosphinic acid  
(C) Pyrophosphorus acid  
(D) Hypophosphoric acid
- Q. 12. The acid that is believed to be mainly responsible for the damage of Taj Mahal is :  
(A) sulphuric acid (B) hydrofluoric acid  
(C) phosphoric acid (D) hydrochloric acid
- Q. 13. Two isomers 'A' and 'B' with molecular formula  $\text{C}_4\text{H}_8$  give different products on oxidation with  $\text{KMnO}_4$  in acidic medium. Isomer 'A' on reaction with  $\text{KMnO}_4/\text{H}^+$  results in effervescence of a gas and gives ketone. The compound 'A' is :

- (A) But-1-ene. (B) *cis*-But-2-ene.  
(C) *trans*-But-2-ene. (D) 2-methyl propene

Q. 14.



In the given conversion the compound A is :

- (A) (B) (C) (D)

Q. 15. Given below are two statements:

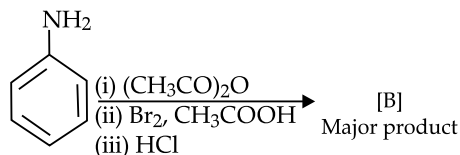
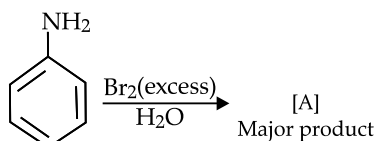
**Statement I:** The esterification of carboxylic acid with an alcohol is a nucleophilic acyl substitution.

**Statement II:** Electron withdrawing groups in the carboxylic acid will increase the rate of esterification reactions.

Choose the **most appropriate** options :

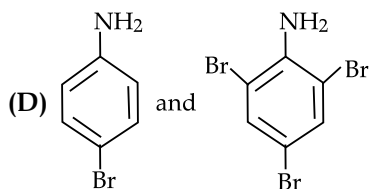
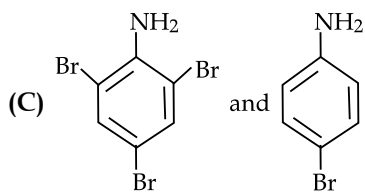
- (A) Both Statement I and Statement II are correct.  
(B) Both Statement I and Statement II are incorrect.  
(C) Statement I is correct but Statement II is incorrect.  
(D) Statement I is incorrect but Statement II is correct.

Q. 16.



Consider the above reactions, the product A and product B respectively are :"

- (A) and
- (B) and



Q. 17. The polymer, which can be stretched and retains its original status on releasing the force is :

- (A) Bakelite (B) Nylon 6, 6  
(C) Buna-N (D) Terylene

Q. 18. Sugar moiety in DNA and RNA molecules respectively are :

- (A)  $\beta$ -D-2-deoxyribose,  $\beta$ -D-deoxyribose  
(B)  $\beta$ -D-2-deoxyribose,  $\beta$ -D-ribose  
(C)  $\beta$ -D-ribose,  $\beta$ -D-2-deoxyribose  
(D)  $\beta$ -D-deoxyribose,  $\beta$ -D-2-deoxyribose

Q. 19. Which of the following compound **does not** contain sulphur atom ?

- (A) Cimetidine (B) Ranitidine  
(C) Histamine (D) Saccharin

Q. 20. Given below are two statement:

**Statement I :** Phenols are weakly acidic.

**Statement II :** Therefore they are freely soluble in NaOH solutions and are weaker acids than alcohols and water.

Choose the **most appropriate** options :

- (A) Both Statement I and Statement II are correct.  
(B) Both Statement I and Statement II are incorrect.  
(C) Statement I is correct but Statement II is incorrect.  
(D) Statement I is incorrect but Statement II is correct.

### Section B

Q. 21. Geraniol, a volatile organic compound, is a component of rose oil. The density of the vapour is  $0.46 \text{ g L}^{-1}$  at  $257^\circ\text{C}$  and

$100 \text{ mm Hg}$ . The molar mass of geraniol is \_\_\_  $\text{g mol}^{-1}$  (Nearest Integer)

[Given :  $R = 0.082 \text{ L atm K}^{-1} \text{ mol}^{-1}$ ]

Q. 22.  $17.0 \text{ g}$  of  $\text{NH}_3$  completely vapourises at  $-33.42^\circ\text{C}$  and  $1 \text{ bar}$  pressure and the enthalpy change in the process is  $23.4 \text{ kJ mol}^{-1}$ . The enthalpy change for the vapourisation of  $85 \text{ g}$  of  $\text{NH}_3$  under the same conditions is \_\_\_  $\text{kJ}$ .

Q. 23.  $1.2 \text{ mL}$  of acetic acid is dissolved in water to make  $2.0 \text{ L}$  of solution. The depression in freezing point observed for this strength of acid is  $0.0198^\circ\text{C}$ . The percentage of dissociation of the acid is \_\_\_\_\_.

[Nearest integer]

[Given : Density of acetic acid is  $1.02 \text{ g mL}^{-1}$

Molar mass of acetic acid is  $60 \text{ g/mol}$ .

$K_f(\text{H}_2\text{O}) = 1.85 \text{ K kg mol}^{-1}$

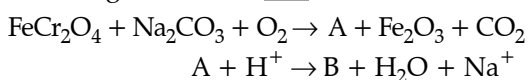
Q. 24. A diluted solution of sulphuric acid is electrolysed using a current of  $0.10 \text{ A}$  for  $2 \text{ hours}$  to produce hydrogen and oxygen gas. The total volume of gases produced at STP is \_\_\_\_\_  $\text{cm}^3$ . (Nearest integer)

[Given : Faraday constant  $F = 96500 \text{ C mol}^{-1}$  at STP, molar volume of an ideal gas is  $22.7 \text{ L mol}^{-1}$ ]

Q. 25. The activation energy of one of the reactions in a biochemical process is  $532611 \text{ J mol}^{-1}$ . When the temperature falls from  $310 \text{ K}$  to  $300 \text{ K}$ , the change in rate constant observed is  $k_{300} = x \times 10^{-5} k_{310}$ . The value of  $x$  is \_\_\_\_.

[Given :  $\ln 10 = 2.3$ ,  $R = 8.3 \text{ J K}^{-1} \text{ mol}^{-1}$ ]

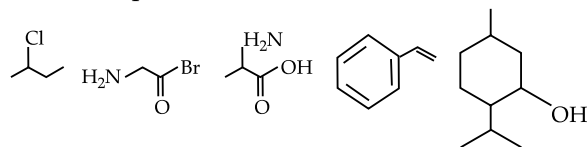
26. The number of terminal oxygen atoms present in the product B obtained from the following reactions is \_\_\_\_.



Q. 27. An acidified manganate solution undergoes disproportionation reaction. The spin-only magnetic moment value of the product having manganese in higher oxidation state is \_\_\_\_\_ B.M. (Nearest integer)

Q. 28. Kjeldahl's method was used for the estimation of nitrogen in an organic compound. The ammonia evolved from  $0.55 \text{ g}$  of the compound neutralised  $12.5 \text{ mL}$  of  $1 \text{ M H}_2\text{SO}_4$  solution. The percentage of nitrogen in the compound is \_\_\_\_\_. (Nearest integer)

Q. 29. Observed structures of the following compounds:



The total number of structures/compounds which possess asymmetric carbon atoms is \_\_\_\_\_.

Q. 30.  $\text{C}_6\text{H}_{12}\text{O}_6 \xrightarrow{\text{Zymase}} \text{A} \xrightarrow[\Delta]{\text{NaOH}} \text{B} + \text{CH}_3$   
The number of carbon atoms present in the product B is \_\_\_\_\_.

## Answer Key- Shift-1

Q. No.	Answer	Topic Name	Chapter Name
<b>Section (A)</b>			
1	C	Stoichiometry and Stoichiometric Calculations	Some Basic Concept of Chemistry
2	D	Electronic configuration	Structure of Atom
3	C	Covalent character	Chemical Bonding
4	D	Solubility	Ionic Equilibrium
5	D	Colloidal solution	Surface chemistry
6	A	Electronic configuration of elements	Classification of elements and periodicity in properties
7	D	Extraction of metals	General principle and process of isolation
8	C	Nature of hydrogen compounds	Hydrogen
9	A	Properties of alkali metal	s block
10	A	Alkali metal	s block
11	B	Oxoacid	p block
12	A	Atmospheric pollution	Environmental Chemistry
13	D	Preparation of aldehyde and ketone	Aldehydes, Ketones and Carboxylic acids
14	B	Chemical reaction of Haloalkanes and Haloarenes	Haloalkanes and Haloarenes
15	A	Chemical reaction of carboxylic acid	Aldehydes, Ketones and Carboxylic acids
16	C	Aniline	Amine
17	C	Classification of Polymer	Polymer
18	B	Nucleic acid	Biomolecules
19	C	Classes of drugs	Chemistry in everyday life
20	C	Properties of Alcohols, phenols and ethers	Alcohols, Phenols and Ethers
<b>Section (B)</b>			
21	152	Molar Masses	Solution
22	117	Enthalpy	Thermodynamics
23	5	Depression in freezing point	Solutions
24	127	Thermal and chemical effect of electric current	Thermochemistry
25	1	Activation Energy	Chemical Kinetics
26	6	Transition Elements	d and f block elements
27	0	Types of Redox Reaction	Redox Reactions
28	64	Kjeldahl's method	General Organic Chemistry
29	3	Alkane	Hydrocarbon
30	1	Reaction of Haloarene	Haloalkanes and Haloarenes

### ANSWERS WITH EXPLANATIONS

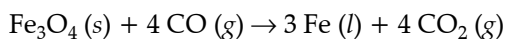
### Chemistry

#### Section A

1. **Option (C) is correct.**

**Explanation :** Moles of  $\text{Fe}_3\text{O}_4 = 4.640 \times \frac{10^3}{232}$   
 $= 20 \text{ mol}$

Moles of  $\text{CO} = 2.52 \times \frac{10^3}{28} = 90 \text{ mol}$



Since, 1 mole of  $\text{Fe}_3\text{O}_4$  produces 3 moles of Fe.  
 So, 20 moles of  $\text{Fe}_3\text{O}_4$  produces  $20 \times 3$  moles of Fe.  
 Moles of Fe produced =  $20 \times 3 = 60$  moles.  
 So, weight of Fe = No. of moles produced

$$\times \text{molar mass of Fe.}$$

Weight of Fe =  $60 \times 56 = 3360 \text{ g.}$

2. **Option (D) is correct.**

**Explanation:** (a) The electronic configuration of Cr is  $[\text{Ar}] 3d^5 4s^1$  is correct.

(b) The magnetic quantum number may have a negative value because it depends upon azimuthal quantum number so,  $m = -l$  to  $+l$  is correct.

(c) According to Aufbau principle, the ground state of an atom, the orbitals are filled in order of their increasing order of their degenerate energy levels so, this statement is also correct.

(d) The total number of nodes are given by  $n - 1$  so, this statement is incorrect.

3. **Option (C) is correct.**

**Explanation:** The covalent nature depends upon the polarizing power of the ion. As the size of the cation increases, its polarizing power decreases. Hence, the covalent character of the compound decreases. So, chloride (Cl) compounds of alkali metals, the decreasing order of covalent character is



Thus, option (C) is correct.

4. **Option (D) is correct.**

**Explanation:** Adding a common ion decreases solubility because a dissociation reaction causes the equilibrium to shift left toward the reactants to relieve the stress of the excess product, causing precipitation. This effect is known as Common Ion Effect. Hence, solubility of  $\text{AgCl}$  will be maximum in deionised water because there is no common ion effect.

5. **Option (D) is correct.**

**Explanation:** When the colloidal particles have similar charges, they will repel each other which prevents them from aggregating when they come close to each other. Hence, the presence of equal and similar charges on colloidal particles provides stability to the colloidal solutions.

6. **Option (A) is correct.**

**Explanation:** The electronic configuration of Pt ( $Z = 78$ ) =  $[\text{Xe}] 4f^{14} 5d^9 6s^1$ .

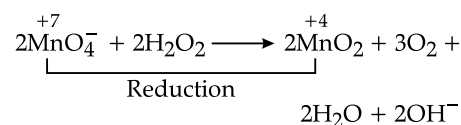
7. **Option (D) is correct.**

**Explanation:** For  $\text{ZnS}$ ,  $\text{KCN}$  is used as depressant to separate  $\text{ZnS}$  and  $\text{PbS}$  ores in froth flotation process. For Gold and silver,  $\text{CaCN}$  is used in cyanide process of extracting silver and gold from their ores by dissolving them in a dilute solution of sodium cyanide or potassium cyanide.

Cyanide salts are not involved in the extraction of copper metal. Hence, option (D) is correct.

8. **Option (C) is correct.**

**Explanation:**



Since, the oxidation state of Mn changes from + 7 to + 4. So, Mn gets reduced.

Therefore,  $\text{H}_2\text{O}_2$  is acting as a reducing agent in the above reaction.

9. **Option (A) is correct.**

**Explanation:** Range of visible region : 390 nm to 760 nm

LiC—Crimson Red – 670.8 nm

NaCl—Golden yellow – 589.2 nm

RbCl—Violet – 780.0 nm

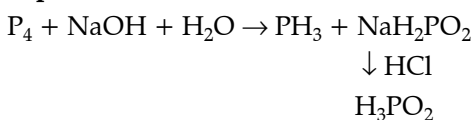
CsCl—Blue – 455.5 nm

10. **Option (A) is correct.**

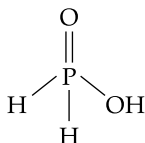
**Explanation:** Caesium is used in devising photoelectric cells. Boron fibres are used in making bullet-proof vest. Silicones being surrounded by non-polar alkyl groups are water repelling in nature. Gallium is less toxic and has a very high boiling point, so it is used in high-temperature thermometers.

11. **Option (B) is correct.**

**Explanation:**



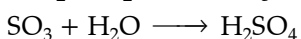
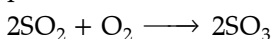
White phosphorus + alkali  $\rightarrow$  Phosphinic acid



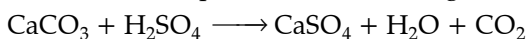
Phosphinic acid

12. **Option (A) is correct.**

**Explanation :** Air pollutants like  $\text{SO}_2$ ,  $\text{NO}_x$  are released in the atmosphere through various human activities. When these pollutants combine and react with water, vapours present in atmosphere forms more acidic pollutants.

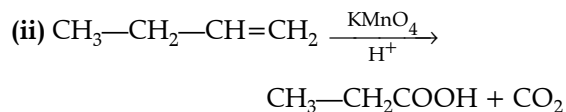
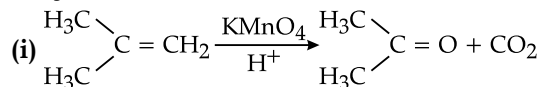
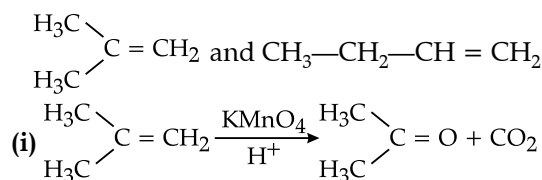


This  $\text{H}_2\text{SO}_4$  formed reacts with  $\text{CaCO}_3$  of Taj Mahal and is responsible for its damage.



13. **Option (D) is correct.**

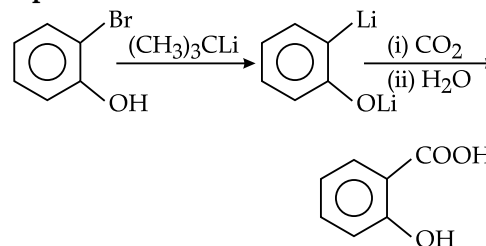
**Explanation:** Two isomers with molecular formula  $\text{C}_4\text{H}_8$  are:



So, Isomer (A) is  $(\text{H}_3\text{C})_2\text{C} = \text{CH}_2$  as it gives ketone and  $\text{CO}_2$ .

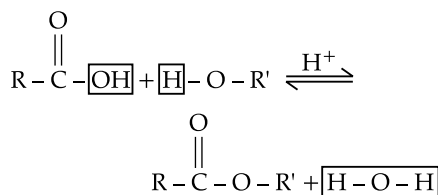
14. **Option (B) is correct.**

**Explanation :**

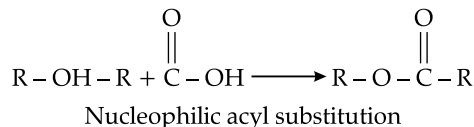


15. **Option (A) is correct.**

**Explanation :**

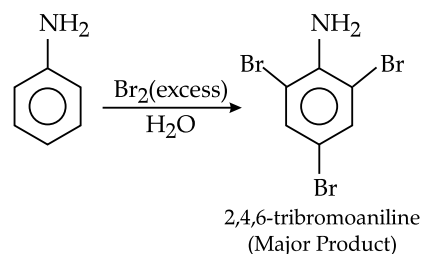


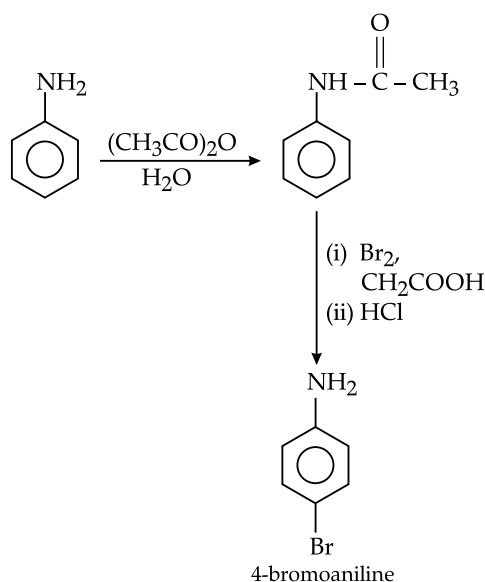
In nucleophilic acyl substitution, attack of the carbonyl carbon atom of an acyl derivative by (a) nucleophile yields a tetrahedral intermediate. The tetrahedral intermediate then ejects a leaving group. Also, electron withdrawing group on carboxylic acid will increase the rate of esterification.



16. **Option (C) is correct.**

**Explanation :**





17. **Option (C) is correct.**

**Explanation :** Bakelite can be moulded very quickly, decreasing production time.

Nylon 6, 6 has high mechanical strength, high toughness, stiffness and hardness.

Buna - N is synthetic rubber which can be stretched and retains its original status on releasing the force.

Terylene is a very strong fibre and will suffer very little loss in strength when wet. It is elastic in nature and possess the property of resist creasing.

18. **Option (B) is correct.**

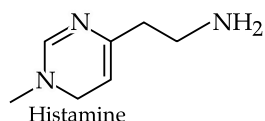
**Explanation:**

DNA contains =  $\beta$ -D - 2 deoxyribose

RNA contains =  $\beta$ -D - ribose

19. **Option (C) is correct.**

**Explanation :**



Histamine is nitrogenous compound so, it does not contain sulphur atom.

20. **Option (C) is correct.**

**Explanation :** Phenol is a weak acid.

Since, the phenoxide ion formed after the removal of  $H^+$  ion is resonance stabilised due to which it's stability increases, so phenol is more acidic than alcohol and water.

### Section B

21. **Correct answer is [152].**

**Explanation :** Assuming ideal behaviour

$$P = dRT/M$$

**Given :**  $P = \frac{100}{760} \text{ atm}$

$$T = 257 + 273 = 530 \text{ K}$$

$$d = 0.46 \text{ g/L}$$

$$M = dRT/P$$

$$= \frac{0.46 \times 0.082 \times 530 \times 760}{100} = 152$$

The molar mass of geraniol is  $152 \text{ g mol}^{-1}$ .

22. **Correct answer is [117].**

**Explanation :**

17 g  $NH_3$  contains 1 mol  $NH_3$ .

So, 85 g  $NH_3$  will have  $\frac{85}{17} = 5$  mol of  $NH_3$

Enthalpy change for 1 mol of vaporisation of  $NH_3 = 23.4 \text{ kJ mol}^{-1}$

So, enthalpy change required for 5 mol of vaporisation,  $\Delta H = 5 \text{ mol} \times 23.4 \text{ kJ}$

$$= 117 \text{ kJ}$$

Therefore, the enthalpy change for the vapourisation of 85 g of  $NH_3$  under the same conditions is 117 kJ.

23. **Correct answer is [5].**

**Explanation :** Given, volume of acetic acid ( $v$ ) = 1.2 mL

Density of acetic acid ( $d$ ) =  $1.02 \text{ g mL}^{-1}$

So, mass of acetic acid ( $m$ ) = Density  $\times$  volume

$$= 1.02 \times 1.2$$

$$= 1.224 \text{ g}$$

Now, molar mass of acetic acid =  $60 \text{ g mol}^{-1}$

So, No. of moles of acetic acid =  $\frac{\text{Mass}}{\text{Molar mass}}$

$$= \frac{1.224}{60} = 0.0204$$

So, Moles = 0.0204 mole in 2L

So, Molality =  $0.0102 \text{ mol/kg}$

$$\Delta T_f = i \times K_f \times m$$

$$0.0198 = i \times 1.85 \times 0.0102$$

$$i = \frac{0.0198}{1.85 \times 0.0102} = 1.049$$

$$i \approx 1.05$$

Since,  $\alpha = \frac{i-1}{n-1} = \frac{1.05-1}{1} = 0.05$

$$\% \alpha = 0.05 \times 100\%$$

$$= 5\%$$

The percentage of dissociation of the acid is = 5%

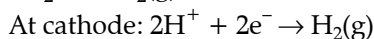
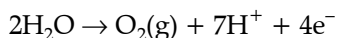
## 24. Correct answer is [127].

**Explanation :** Given: 2 F produces = 3/2 mole of gas

$$i = 0.10 \text{ A}$$

$$T = 2 \text{ h}$$

Reaction at anode



$$\text{Number of equivalent} = \frac{i \times t}{96500}$$

$$= 0.10 \times 2 \times 3600 \text{ coulomb produce}$$

$$= \frac{3 \times 0.1 \times 2 \times 3600}{2 \times 2 \times 96500}$$

$$\text{Volume of gas produced} = 0.0056 \times 22.7 \text{ L}$$

$$= 0.127 \text{ L}$$

$$= 127 \text{ mL}$$

## 25. Correct answer is [1].

**Explanation :**  $\ln k_2/k_1 = \frac{E_a}{R} \left[ \frac{1}{T_1} - \frac{1}{T_2} \right]$

$$\ln 310/300 = \frac{532611}{8.3} \left[ \frac{1}{300} - \frac{1}{310} \right]$$

$$\ln \frac{k_{310}}{k_{200}} = \frac{532611}{8.3} \left( \frac{10}{93000} \right)$$

$$\ln \frac{k_{310}}{k_{300}} = 6.9$$

$$\ln \frac{k_{310}}{k_{300}} = 3 \times \ln 10$$

$$\frac{k_{310}}{k_{300}} = 10^3$$

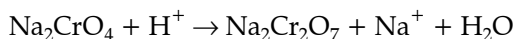
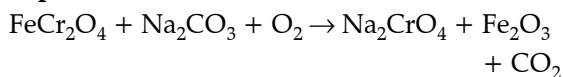
$$k_{300} = k_{310} \times 1 \times 10^{-3}$$

i.e.,  $k_{300} = 1 \times 10^{-3} k_{310}$

So,  $x = 1$

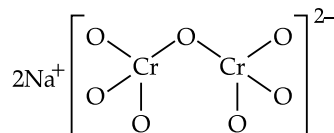
## 26. Correct answer is [6].

**Explanation :**



(A)

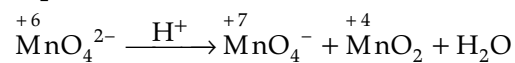
(B)



The number of terminal oxygen atoms present in the product B is 6.

## 27. Correct answer is [0]

**Explanation :**



In  $\text{Mn}^{7+}$ , there is no unpaired electron.

So, spin only magnetic moment value of  $\text{MnO}_4^-$  is 0.

## 28. Correct answer is [64].

**Explanation :**

$$\% \text{ N} = \frac{1.4 \times \text{N} \times \text{V}}{\text{Mass of organic compound}}$$

$$\% \text{ N} = \frac{1.4 \times 2 \times 12.5}{0.55} = 63.63\%$$

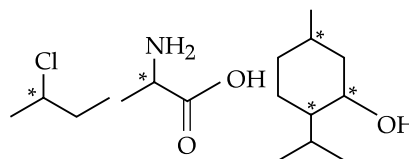
$$[\because \text{Normality} = \text{Molarity} \times n \text{ factor}]$$

$$\text{N} = 1 \times 2 = 2]$$

$$= 64\%$$

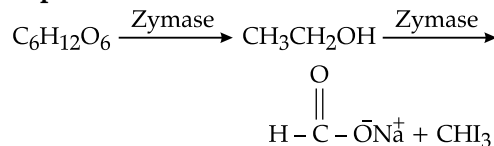
## 29. Correct answer is [3].

**Explanation :** Compound which possesses asymmetric carbon atoms are:



## 30. Correct answer is [1]

**Explanation :**



So, in  $\text{HCOONa}$  (B), numbers of carbon atom is 1.

□□