

# CBSE EXAMINATION PAPER-2023

## CHEMISTRY

(Solved)

Time allowed : 3 hours

Maximum Marks : 17

### General Instructions :

Read the following instructions carefully and follow them :

- i. This question paper contains **17 questions**. All questions are **compulsory**.
- ii. This question paper is divided into **3 sections**.
- iii. **Section A** – questions number **1 to 14** are multiple choice questions Each question carries **1 marks**.
- iv. **Section B** – questions number **15 to 16** are very short answer Each question carries **2 marks**.
- v. **Section C** – questions number **17 to 17** are case based questions
- vi. There is no overall choice given in the question paper. However, an internal choice has been provided in few questions.
- vii. Use of calculator is NOT allowed.

### Section A

#### Question 1.

The conversion of an alkyl halide into an alkene by alcoholic KOH is classified as

[1 Marks]

(A) a dehydrohalogenation reaction

(B) an addition reaction

(C) a dehydration reaction

(D) a substitution reaction

### Question 2.

The oxidation state of Fe in  $[\text{Fe}(\text{CO})_5]$  is

[1 Marks]

(A) +5

(B) +3

(C) +2

(D) 0

### Question 3.

The slope in the plot of  $\ln[R]$  vs. time for a first order reaction is

[1 Marks]

(A) + k

(B) - k

(C) +  $k/2.303$

(D) -  $k/2.303$

### Question 4.

An  $\alpha$ -helix is a structural feature of

[1 Marks]

(A) Nucleotides

(B) Starch

(C) Polypeptides

(D) Sucrose

### Question 5.

Racemisation occurs in

[1 Marks]

(A)  $S_N1$  reaction

(B)  $S_N2$  reaction

(C)  $S_N2$  reaction as well as  $S_N1$  reaction

(D) Neither  $S_N1$  nor  $S_N2$  reaction

### Question 6.

Value of Henry's constant  $K_H$ :

[1 Marks]

(A) decreases with increase in temperature.

(B) remains constant.

(C) increases with increase in temperature.

(D) increases with decrease in temperature.

### Question 7.

Which of the following solutions of KCl will have the highest value of molar conductivity?

[1 Marks]

(A) 1 M

(B) 0.1 M

(C) 0.5 M

(D) 0.01 M

### Question 8.

Which of the following reactions are feasible?

[1 Marks]

(A) Both (a) and (b)

(B)  $\text{CH}_3\text{CH}_2\text{Br} + \text{Na}^+ \text{O}-\text{C}(\text{CH}_3)_3 \rightarrow \text{CH}_3\text{CH}_2-\text{O}-\text{C}(\text{CH}_3)_3$

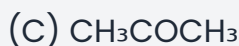
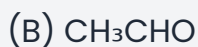
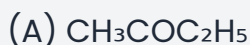
(C) Neither (a) nor (b)

(D)  $(\text{CH}_3)_3\text{C}-\text{Cl} + \text{Na}^+ \text{O}-\text{CH}_2\text{CH}_3 \rightarrow \text{CH}_3\text{CH}_2-\text{O}-\text{C}(\text{CH}_3)_3$

**Question 9.**

Which of the following is most reactive in nucleophilic addition reactions?

[1 Marks]

**Question 10.**

For the reaction  $3\text{A} \rightarrow 2\text{B}$ , rate of reaction  $+ d[\text{B}]/dt$  is equal to

[1 Marks]

(A)  $+(2d[\text{A}]/dt)$

(B)  $-(3/2)d[\text{A}]/dt$

(C)  $-(2/3)d[\text{A}]/dt$

(D)  $-(1/3)d[\text{A}]/dt$

**Question 11.**

Which of the following characteristics of transition metals is associated with their catalytic activity?

[1 Marks]

(A) High enthalpy of atomisation

(B) Variable oxidation states

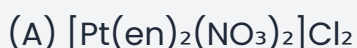
(C) Paramagnetic nature

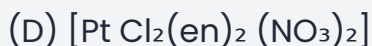
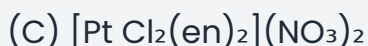
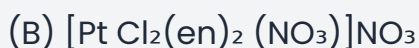
(D) Colour of hydrated ions

**Question 12.**

The formula of the complex dichloridobis(ethane-1, 2-diamine) platinum(IV) nitrate is

[1 Marks]





**Question 13.**

Assertion (A) : Osmotic pressure is a colligative property.

Reason (R) : Osmotic pressure is proportional to the molality.

(A) (A) is false, but (R) is true.

(B) Both (A) and (R) are true and (R) is the correct explanation of (A).

(C) (A) is true, but (R) is false

(D) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

**Question 14.**

Assertion (A) : Copper is a non-transition element.

Reason (R) : Copper has completely filled d-orbitals in its ground state.

[1 Marks]

(A) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(B) (A) is false, but (R) is true.

(C) (A) is true, but (R) is false.

(D) Both (A) and (R) are true and (R) is the correct explanation of (A).

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## Section B

**Question 15.**

The vapour pressure of pure liquid X and pure liquid Y at 25 °C are 120 mm Hg and 160 mm Hg respectively. If equal moles of X and Y are mixed to form an ideal solution, calculate the vapour pressure of the solution.

[2 Marks]

### Question 16.

Define fuel cell with an example. What advantages do the fuel cells have over primary and secondary batteries ?

[2 Marks]

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## Section C

**Question 17.** The carbon – oxygen double bond is polarised in aldehydes and ketones due to higher electronegativity of oxygen relative to carbon. Therefore they undergo nucleophilic addition reactions with a number of nucleophiles such as HCN, NaHSO<sub>3</sub>, alcohols, ammonia derivatives and Grignard reagents. Aldehydes are easily oxidised by mild oxidising agents as compared to ketones. The carbonyl group of carboxylic acid does not give reactions of aldehydes and ketones. Carboxylic acids are considerably more acidic than alcohols and most of simple phenols.

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