CBSE EXAMINATION PAPER-2024

CHEMISTRY

(Solved)

Time allowed : 3 hours | Maximum Marks : 19

General Instructions :

Read the following instructions carefully and follow them :

i. This question paper contains **16 questions.** All questions are **compulsory.**

ii. This question paper is divided into **4 sections.**

iii. **Section A** – questions number **1 to 12** are multiple choice questions Each question carries **1 marks.**

iv. **Section B** – questions number **13 to 14** are very short answer Each question carries **2 marks.**

v. **Section C** – questions number **15 to 15** are short answer Each question carries **3 marks.**

vi. **Section D** – questions number **16 to 16** are case based questions

vii. There is no overall choice given in the question paper. However, an internal choice has been provided in few questions.

viii. Use of calculator is NOT allowed.

Section A

Question 1.

The specific sequence in which amino acids are arranged in a protein is called its

[1 Marks]

(A) Secondary structure

(B) Tertiary structure

(C) Primary structure

(D) Quaternary structure

Question 2.

Out of the following alkenes, the one which will produce tertiary butyl alcohol on acid catalysed hydration is

[1 Marks]

(A) CH_3-CH=CH-CH_3

(B) $(CH_3)_2C=CH_2$

(C) $CH_3CH_2CH=CH_2$

(D) $CH_3CH=CH_2$

Question 3.

Auto-oxidation of chloroform in air and light produces a poisonous gas known as

[1 Marks]

(A) Phosgene

(B) Tear gas

(C) Mustard gas

(D) Phosphine

Question 4.

Transition metals are known to make interstitial compounds. Formation of interstitial compounds makes the transition metal

[1 Marks]

(A) more metallic

(B) more ductile

(C) more hard

(D) more soft

Question 5.

Isotonic solutions have the same

[1 Marks]

(A) volume

(B) osmotic pressure

(C) density

(D) refractive index

Question 6.

Which of the following cell was used in Apollo space programme?

[1 Marks]

(A) Ni-Cd cell

(B) Dry cell

(C) H_2-O_2 fuel cell

(D) Mercury cell

Question 7.

The rate of a reaction increases sixteen times when the concentration of the reactant increases four times. The order of the reaction is

[1 Marks]

(A) 2.0

(B) 2.5

(C) 1.5

(D) 0.5

Question 8.

Dilution affects both conductivity as well as molar conductivity. Effect of dilution on both is as follows

[1 Marks]

(A) both decrease with dilution

(B) both increase with dilution

(C) conductivity increases whereas molar conductivity decreases on dilution

(D) conductivity decreases whereas molar conductivity increases on dilution

Question 9.

Assertion (A): Zr and Hf are of almost similar atomic radii.

Reason (R): This is due to Lanthanoid contraction.

[1 Marks]

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

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

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

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

Question 10.

Assertion (A): The units of rate constant of a zero order reaction and rate of reaction are the same

Reason (R): In a zero order reaction, the rate of reaction is independent of the concentration of reactants.

[1 Marks]

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

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

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

(D) Assertion (A) is false, but Reason (R) is true.

Question 11.

Assertion (A): Inversion of configuration is observed in SN_2 reaction.

Reason (R): The reaction proceeds with the formation of a carbocation.

[1 Marks]

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

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

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

(D) Assertion (A) is false, but Reason (R) is true.

Question 12.

Assertion (A): p-methoxyphenol is a stronger acid than p-nitrophenol.

Reason (R): Methoxy group shows +I effect whereas nitro group shows -I effect.

[1 Marks]

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

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

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

(D) Assertion (A) is false, but Reason (R) is true.

Section B

Question 13.

Carry out the following conversions:

(i) Nitrobenzene to Aniline

(ii) Aniline to Phenol.

[2 Marks]

Question 14.

Show that in case of a first order reaction, the time taken for completion of 99% reaction is twice the time required for 90% completion of the reaction. (log 10 = 1)

[2 Marks]

Section C

Question 15.

Draw the structures of major product(s) in each of the following reactions

[3 Marks]

Section D

Question 16. The oxidation number of the central atom in a complex is defined as the charge it would carry if all the ligands are removed along with the electron pairs that are shared with the central atom. Similarly, the charge on the complex is the sum of the charges of the constituent parts i.e. the sum of the charges on the central metal ion and its surrounding ligands. Based on this, the complex is called neutral if the sum of the charges of the constituents is equal to zero. However, for an anionic or cationic complex, the sum of the charges of the constituents is equal to the charge on the coordination sphere. Based on the above information, answer the following questions.