

CBSE EXAMINATION PAPER-2024

CHEMISTRY

(Solved)

Time allowed : 3 hours

Maximum Marks : 17

General Instructions :

Read the following instructions carefully and follow them :

- i. This question paper contains **15 questions**. All questions are **compulsory**.
- ii. This question paper is divided into **4 sections**.
- iii. **Section A** – questions number **1 to 7** are multiple choice questions Each question carries **1 marks**.
- iv. **Section B** – questions number **8 to 9** are very short answer Each question carries **2 marks**.
- v. **Section C** – questions number **10 to 11** are short answer Each question carries **3 marks**.
- vi. **Section D** – questions number **12 to 15** 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.

Which of the following does not show variable oxidation states?

[1 Marks]

(A) Cu

(B) Mn

(C) Sc

(D) Fe

Question 2.

$(\text{CH}_3)_2\text{CH-O-CH}_3$ when treated with HI gives:

[1 Marks]

(A) $(\text{CH}_3)_2\text{CH - OH} + \text{CH}_3 \text{-I}$

(B) $(\text{CH}_3)_2\text{CH -I} + \text{CH}_3\text{OH}$

(C) $(\text{CH}_3)_2\text{CH -I} + \text{CH}_3 \text{-I}$

(D) $(\text{CH}_3)_2\text{CH - OH} + \text{CH}_3\text{OH}$

Question 3.

Which of the following compounds on treatment with benzene sulphonyl chloride forms an alkali-soluble precipitate?

[1 Marks]

(A) CH_3CONH_2

(B) $(\text{CH}_3)_3\text{N}$

(C) $(\text{CH}_3)_2\text{NH}$

(D) $\text{CH}_3\text{CH}_2\text{NH}_2$

Question 4.

The order of increasing basicities of CH_3NH_2 (I), $(\text{CH}_3)_2\text{NH}$ (II), $(\text{CH}_3)_3\text{N}$ (III) and $\text{C}_6\text{H}_5\text{NH}_2$ (IV) in aqueous media is:

[1 Marks]

(A) $\text{IV} < \text{III} < \text{I} < \text{II}$

(B) $\text{I} < \text{II} < \text{III} < \text{IV}$

(C) $\text{II} < \text{III} < \text{I} < \text{IV}$

(D) $\text{II} < \text{I} < \text{IV} < \text{III}$

Question 5.

The vitamin which plays an important role in coagulating blood is:

[1 Marks]

(A) Vitamin A

(B) Vitamin E

(C) Vitamin D

(D) Vitamin K

Question 6.

When a catalyst increases the rate of a chemical reaction, then the rate constant (k):

[1 Marks]

(A) may increase or decrease depending on the order of the reaction

(B) increases

(C) remains constant

(D) decreases

Question 7.

During the electrolysis of aqueous NaCl, the cathodic reaction is:

[1 Marks]

(A) Oxidation of H_2O

(B) Reduction of H_2O

(C) Oxidation of Cl^- ion

(D) Reduction of Na^+ ion

Section B

Question 8. Define molal depression constant. How is it related to enthalpy of fusion?

[2 Marks]

Question 9.

What type of deviation is shown by ethanol and acetone mixture? Give reason. What type of azeotropic mixture is formed by that deviation ?

[2 Marks]

Section C

Question 10.

A solution is prepared by dissolving 5 g of a non-volatile solute in 200 g of water. It has a vapour pressure of 31.84 mm Hg at 300 K. Calculate the molar mass of the solute.

(Vapour pressure of pure water at 300 K = 32 mm Hg)

[3 Marks]

Question 11.

A first-order reaction is 25% complete in 40 minutes. Calculate the value of rate constant. In what time will the reaction be 80% complete ?

Given : $\log 2 = 0.30$, $\log 3 = 0.48$, $\log 4 = 0.60$, $\log 5 = 0.69$

[3 Marks]

Section D

Question 12. The involvement of $(n-1)d$ electrons in the behaviour of transition elements impart certain distinct characteristics to these elements. Thus, in addition to variable oxidation states, they exhibit paramagnetic behaviour, catalytic properties and tendency for the formation of coloured ions. The transition metals react with a number of non-metals like oxygen, nitrogen and halogens. KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$ are common examples. The two series of inner transition elements, lanthanoids and actinoids, constitute the f-block of the periodic table. In the lanthanoids, there is regular decrease in atomic size with increase in atomic number due to the imperfect shielding effect of 4f-orbital electrons which causes contraction.

Question 13.

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Question 14.

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Question 15.

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