

MPBSE Class 12th Chemistry - 2023 Question Paper

Time Allowed :3 Hour | Maximum Marks :70 | Total Questions :19

General Instructions

Read the following instructions very carefully and strictly follow them:

1. Attempt all questions.
2. Read the instructions carefully.
3. Marks allotted to each question are indicated against it.

1. i. Formula of Osmotic pressure is:

- (1) $\pi = \frac{nRT}{V}$
- (2) $P = \frac{KT}{V}$
- (3) $P = \frac{RT}{M}$
- (4) $\pi = \frac{PV}{T}$

1. ii. Order of reaction for rate = $K[A]^{1/2}[B]^{3/2}$ is:

- (1) $\frac{2}{5}$
- (2) $\frac{4}{3}$
- (3) 2.5
- (4) 3

1. iii. Inner transition element is:

- (1) Sc
- (2) Hg
- (3) V
- (4) Ce

1. iv. The oxidation number of Fe in $K_2[Fe(CN)_6]$ is:

- (1) +6
- (2) +4

(3) +3
(4) -4

1. v. Alkyl iodides are often prepared by the reaction of alkyl chloride/bromides with NaI in dry acetone. This reaction is known as:

(1) Finkelstein reaction
(2) Sandmeyer's reaction
(3) Coupling reaction
(4) Kolbe's reaction

1. vi. Alcohols react with sodium to form:

(1) $R - O - R$
(2) RONa
(3) RCHO
(4) RCH₂OH

1. vii. Which of the following is most acidic?

(1) CF₃COOH
(2) CCl₃COOH
(3) CHCl₂COOH
(4) CH₃COOH

2. (i) Molarity of water is _____

2. (ii) The value of potential of standard hydrogen electrode is _____

2. (iii) The colour of Ni²⁺ is _____

2. (iv) The chemical name of EDTA is _____

2. (v) Anisole reacts with concentrated H_2SO_4 and HNO_3 to yield a mixture of _____

2. (vi) Methyl amine is _____ and _____ basic than ammonia.

2. (vii) Chemical name of vitamin B_2 is _____

3. Match the pairs correctly:

(i)	Sucrose	$C_{12}H_{22}O_{11}$
(ii)	Aldohexose	Glucose
(iii)	Mn	+7
(iv)	Primary valence	Negative ions
(v)	R-O-R	Ether
(vi)	Hoffmann bromide	Primary amine
(vii)	Milk sugar	Lactose

4. (i) Write the formula of molar conductivity _____

4. (ii) Write the unit of rate constant for zero order reaction _____

4. (iii) Write the electronic configuration of Scandium _____

4. (iv) Write the chemical name of DDT -----

4. (v) Write the chemical reaction of coupling reaction -----

4. (vi) Write the formula of Hinsberg's reagent -----

4. (vii) Write the name of monomer of proteins -----

5. Write the definition of mole fraction.

OR

5. Write the definition of solution.

6. Write the functions of salt bridge.

OR

6. Write the first law of Faraday of electrolysis.

7. Write any two differences between Molecularity of reaction and Order of reaction.

OR

7. Write any two differences between Rate of reaction and Rate constant.

8. Write the IUPAC names of the following coordination compound: (i) $[Co(NH_3)_6]Cl_3$

8. (ii) $K_2[Ni(CN)_4]$

OR

8. Define oxidation number of central metal atom with example.

9. Define coordination number with example.

OR

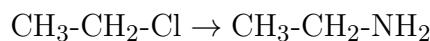
9. Write the definition of hydrate isomerism with example.

10. Write the Etard reaction with chemical equation.

OR

10. Write two uses of Carboxylic Acid.

11. Write only chemical equation for following conversion:



OR

11. Write the reason, Ethylamine is more basic than Ammonia.

12. Write any two differences between Fibrous Protein and Globular Protein.

OR

12. Write any two differences between DNA and RNA.

13. The vapour pressure of pure benzene at a certain temperature is 0.850 bar and 0.5 gm of a non-volatile non-electrolyte solid weighing is added to 39.0 gm of benzene (Molar mass 78 g mol^{-1}) then the vapour pressure of the solution is 0.845 bar. What is the molar mass of the solid substance?

OR

13. 18 gm glucose $C_6H_{12}O_6$ is dissolved in 1 kg of water in a saucepan. At what temperature will water boil at 1.013 bar? K_b for water is $0.52 \text{ K kg mol}^{-1}$.

14. Write the unit of rate constant for first order of reaction and second order of reaction.

OR

14. Write the following with definition:

- (i) Rate determining step
- (ii) Order of reaction

15. Write any three differences between d-block and f-block elements.

OR

15. Write any three differences between Lanthanoid and Actinoid.

16. Write only chemical equation for the following reactions:

OR

16. Write the structure of following compound:

17. Write the mechanism of SN1 and SN2 reactions.

OR

17. Write the following reactions with chemical equation:

- (i) Sandmeyer's reaction
- (ii) Fittig reaction

18. Draw the labelled diagram of Electro-chemical cell and write its structure and chemical reaction.

OR

18. Write and derive Nernst equation.

19. How will you prepare the following from acetic acid (CH_3COOH)?

Write the Chemical equations:

- (i) Acetic Anhydride.
- (ii) Ethyl Acetate.
- (iii) Acetyl Chloride.
- (iv) Ethyl Alcohol.
- (v) Acetamide.

OR

19. Complete and write the following reactions:

