

NAAHAR PUBLIC SCHOOL CBSE SEMNIOR SECONDARY
ACADEMIC YEAR (2022-2023)
FULL REVISION-1

STD: XII
SUBJECT: CHEMISTRY
SUBJECT TEACHER: MRS.UMA

MARKS: 70
DATE: 03 .12.2022
DUR: 3 HRS

General Instructions:

1. There are 35 questions in this question paper with internal choice.
2. SECTION A consists of 18 multiple-choice questions carrying 1 mark each.
3. SECTION B consists of 7 very short answer questions carrying 2 marks each.
4. SECTION C consists of 5 short answer questions carrying 3 marks each.
5. SECTION D consists of 2 case-based questions carrying 4 marks each.
6. SECTION E consists of 3 long answer questions carrying 5 marks each.
7. All questions are compulsory.
8. Use of log tables and calculators is not allowed.

SECTION-A

(18 x 1=18)

Directions (Q.Nos.1-18) : The following questions are multiple-choice questions with one correct answer.

Each question carries 1 mark. There is no internal choice in this section.

1) Which of the following compounds can yield only one mono chlorinated product upon free radical chlorination?

- | | |
|--------------------------|---------------------|
| (a) 2, 2-Dimethylpropane | (b) 2-Methylpropane |
| (c) 2-Methylbutane | (d) n-Butane |

2) The Synthesis of Alkyl Fluoride is best accomplished by

- | | |
|---------------------------|--------------------------|
| (a) Finkelstein reaction | (b) Swarts synthesis |
| (c) Free radical reaction | (d) Sandmeyer's reaction |

3) Which of the following reactant gives the best method of preparation of alkyl halides when reacts with alcohol?

- | | | | |
|------------|----------------------|----------------------------------|----------------------|
| (a) Zn/HCl | (b) PCl ₅ | (c) SOCl ₂ / Pyridine | (d) PCl ₃ |
|------------|----------------------|----------------------------------|----------------------|

4) A compound that reacts fastest with Lucas Reagent at room temperature is

- | | |
|--------------------------|--------------------------|
| (a) butan-1-ol | (b) butan-2-ol |
| (c) 2-methylpropan -1-ol | (d) 2-methylpropan-2-ol. |

5) Carbonyl compounds undergo nucleophilic addition because of

- (a) More stable anion with negative charge on oxygen and less stable carbonation
(b) Electrometric effect
(c) Electro negativity difference of carbon and oxygen atoms
(d) None of the above.

6) Wolff Kishner reduction is carried with

- | | |
|--|---|
| (a) LiAlH ₄ in ether | (b) Zn-Hg and HCl |
| (c) H ₂ in the presence of Pd | (d) NH ₂ -NH ₂ /ethylene glycol and KOH |

7) The addition of HCN to carbonyl compounds is an example of

- | | |
|-------------------------------|--------------------------------|
| (a) Electrophilic addition | (b) Nucleophilic addition |
| (c) Nucleophilic substitution | (d) Electrophilic substitution |

8) Oxidation of cyclohexene using acidified KMnO₄ will give

- | | |
|---------------------------------|----------------------------------|
| (a) adipic acid | (b) hexane -1,6-dial |
| (c) cyclohexane carboxylic acid | (d) cyclopentane carboxylic acid |

9) Which aldehyde will give Cannizzaro's reaction?

- | | |
|---|---|
| (a) CH ₃ CH ₂ CH ₂ CHO | (b) CH ₃ CH ₂ CHCHO |
| (c) (CH ₃) ₃ CCHO | (d) (CH ₃) ₂ CH ₂ CH ₂ CHO |

10) When manganese dioxide is fused with KOH in air. It gives

- | | |
|----------------------------|--------------------------------------|
| (a) potassium permanganate | (b) potassium manganate |
| (c) manganese hydroxide | (d) Mn ₃ O ₄ . |

11). Which of the following are d-block elements but not regarded as transition elements?

- | | | | |
|----------------|----------------|----------------|----------------|
| (a) Cu, Ag, Au | (b) Zn, Cd, Hg | (c) Fe, Co, Ni | (d) Ru, Rh, Pd |
|----------------|----------------|----------------|----------------|

12). The property which is not characteristic of transition metals is

- | | |
|--------------------------------------|---------------------------------|
| (a) variable oxidation states. | (b) tendency to form complexes. |
| (c) formation of coloured compounds. | (d) natural radioactivity. |

13). Lanthanoid contraction is due to increase in

- | | |
|-------------------|------------------------------|
| (a) atomic number | (b) effective nuclear charge |
| (c) atomic radius | (d) valence electrons |

14) Acidified potassium dichromate reacts with potassium iodide and oxidises it to I₂. What is the oxidation state of chromium in the products of the reaction?

- (a) +4 (b) +6 (c) +3 (d) +2

15). In KMnO₄ oxidation number of Mn is

- (a) +2 (b) +4 (c) +6 (d) +7

ASSERTION -REASON TYPE QUESTIONS

In the following questions, two statements (Assertion) A and Reason (R) are given.

(a) If A and R both are correct and R is the correct explanation of A

(b) If A and R both are correct but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

16) Assertion: Tungsten has very high melting point.

Reason: Tungsten is a covalent compound.

17) Assertion: Zn, Cd and Hg are normally not considered transition metals

Reason: d-Orbitals in Zn, Cd and Hg elements are completely filled, hence these metals do not show the general characteristics properties of the transition elements

18) Assertion: Alkylation of amines gives poly substituted product where as acylation of amines gives a mono substituted product

Reason: Steric hindrance of an acyl group prevents the approach of further acyl groups

SECTION-B

(7x2=14)

This section contains 7 questions with internal choice in 2 questions the following questions are very short answer type and carry 2 marks each

19) Haloalkanes react with KCN to form alkyl cyanides as main product while AgCN forms isocyanides as the chief product. Explain.

20) Give chemical tests to distinguish between

(a) Benzyl chloride & chloro benzene

(OR)

(b) Vinyl iodide and ethyl iodide

21) What is the significance of Henry's Law constant K_H ?

22) The para-isomers of isomeric dihalobenzenes are high melting as compared to their ortho- and meta-isomers.

OR

Haloalkanes react with KCN to form alkyl cyanides as main product while AgCN forms isocyanides as the chief product. Explain.

23) Out of Fe and Cu, which has a higher melting point and why?

24) Account for the following : CH₃CHO is more reactive than CH₃COCH₃ towards reaction with HCN.

25) Why aniline does not undergo Friedel -Crafts reaction?

SECTION-C (3x5=15)

This section contains 5 questions with internal choice in two questions the following questions are short answer type and carry 3 mark each .

26). Define an ideal solution and write one of its characteristics.

27) Cl is an electron withdrawing group but it is ortho, para- directing in electrophilic aromatic substitution reactions. Why?

28) Give chemical tests to distinguish between

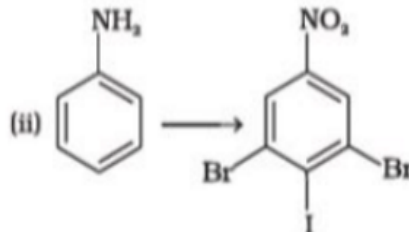
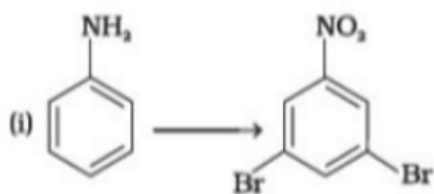
(a) Benzyl chloride & chloro benzene (OR)

(b) Vinyl iodide and ethyl iodide

29) Write following conversions:

i) nitrobenzene → acetanilide (ii) acetanilide → p-nitroaniline

30) How will you carry out the following conversions?



OR

i) A solution contains 1 g mol each of p-toluene diazonium chloride and p-nitrophenyl diazonium chloride. 1 g mol of an alkaline solution of phenol is added to this. Predict the major product. Explain your answer.

SECTION-D (3x1=3) (any 3)

The following questions or case based questions each question as an internal choice and carries for marks each read the passage carefully and answer the questions that follow.

The properties of the solutions which depend only on the number of solute particles but not on the nature of the solute are called colligative properties. Relative lowering in vapour pressure is also an example of colligative properties.

For an experiment, sugar solution is prepared for which lowering in vapour pressure was found to be 0.061 mm of Hg. (Vapour pressure of water at 20°C is 17.5 mm of Hg)

31. The following questions are multiple choice questions. Choose the most appropriate answer:

(i) Relative lowering of vapour pressure for the given solution is

- (a) 0.00348 (b) 0.061 (c) 0.122 (d) 1.75`

(ii) The vapour pressure (mm of Hg) of solution will be

- (a) 17.5 (b) 0.61 (c) 17.439 (d) 0.00348

(iii) Mole fraction of sugar in the solution is

- (a) 0.00348 (b) 0.9965 (c) 0.061 (d) 1.75

iv) If weight of sugar taken is 5 g in 108 g of water then molar mass of sugar will be

- (a) 358 (b) 120 (c) 240 (d) 400

(v) The vapour pressure (mm of Hg) of water at 293K when 25g of glucose is dissolved in 450 g of water is

- (a) 17.2 (b) 17.4 (c) 17.120 (d) 17.02

SECTION-E (4 x5=20)

Q.no 32-35 the following questions are long answer type and carry 5 mark each two questions have internal choice.

32) Assign reasons for the following:

- a) The enthalpies of atomization of transition elements are high.
- b) The transition metals and many of their compounds act as good catalysts.
- c) There is a gradual decrease in the atomic sizes of transition elements in a series with increasing atomic numbers.
- d) The transition elements have a great tendency for complex formation.
- e) Transition metals generally form coloured compounds.

33. On the basis of Lanthanoid contraction, explain the following

- (i) Nature of bonding in Lu_2O_3 and La_2O_3
- (ii) Trends in the stability of oxo salts of lanthanides from La to Lu.
- (iii) Stability of the complexes of lanthanides.
- (iv) Radii of 4d and 5d block elements
- (v) Trends in acidic character of lanthanide oxides.

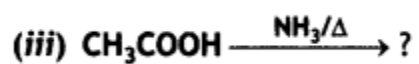
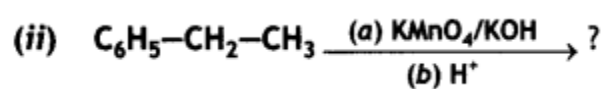
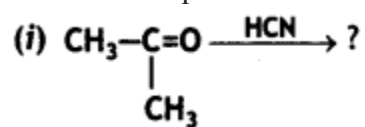
(or)

Illustrate the following name reactions :

- (i) Hell-Volhard-Zelinsky reaction
- (ii) Wolff-Kishner reduction reaction
- (b) How are the following conversions carried out:
 - (i) Ethylcyanide to ethanoic acid
 - (ii) Butan-1-ol to butanoic acid
- (iii) Methylbenzene to benzoic acid

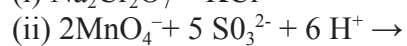
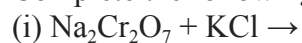
Write chemical equations for the involved reactions.

34. Predict the products of the following reactions:



(OR)

Complete the following chemical reactions:



(b) How does the colour of $\text{Cr}_2\text{O}_7^{2-}$ change when treated with an alkali?

35. Write the reactions involved

a) etard reaction ii) Stephen reduction

b) write the conversions

i) benzoic acid to benzaldehyde

ii) acetophenone to benzoic acid

iii) ethanoic acid to 2-hydroxyethanoic acid