

OBJECTIVE

NOTE: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

- 1 Mark the correct statement
(A) Na^+ is smaller than Na atom (B) Na^+ is larger than Na atom
(C) Cl^- is smaller than Cl atom (D) Cl^- ion and Cl atom are equal in size
- 2 In the Down's cell, CaCl_2 is added to NaCl
(A) Increase the solubility (B) Increase the dissociation
(C) Increase the conductivity (D) To lower its melting point
- 3 The solution of the acid used for seasoning of food is
(A) Formic acid (B) Benzoic acid (C) Acetic acid (D) Butanoic acid
- 4 The benzene molecule contains
(A) Three double bonds (B) Two double bonds
(C) One double bond (D) Delocalized π electron charge
- 5 For which mechanism, the first step involved is the same
(A) E_1 and E_2 (B) E_2 and SN_2 (C) SN_1 and E_2 (D) E_1 and SN_1
- 6 Hydrogen bond is the strongest between the molecules of:
(A) HF (B) HCl (C) HBr (D) HI
- 7 A single chloride free radical destroys how many ozone molecules
(A) 100 (B) 100,000 (C) 1000 (D) 10
- 8 Laughing gas is chemically
(A) NO (B) N_2O (C) NO_2 (D) N_2O_4
- 9 Linear shape is associated with which type of hybridization?
(A) sp (B) sp^2 (C) sp^3 (D) dsp^2
- 10 Cannizzaro's reaction is not given by
(A) Formaldehyde (B) Acetaldehyde (C) Benzaldehyde (D) Tri-methyl acetaldehyde
- 11 Synthetic rubber is made by the polymerization of
(A) Chloroprene (B) Chloroform (C) Acetylene (D) Di-vinyl Acetylene
- 12 Tincal is a mineral of
(A) Al (B) B (C) Si (D) C
- 13 Which one of these polymers is an example of addition polymer?
(A) Nylon 6,6 (B) Polystyrene (C) Terylene (D) Epoxy resin
- 14 Which one is non-typical transition element?
(A) Cr (B) Mn (C) Zn (D) Fe
- 15 Methyl alcohol is not used as
(A) as a solvent (B) as an anti-freezing agent (C) as a substitute for petrol
(D) for denaturing of ethyl alcohol
- 16 How many zones through which the charge passes in a rotary kiln?
(A) 4 (B) 3 (C) 2 (D) 5
- 17 The pH of unpolluted rain water should be
(A) 5.6 (B) 7.0 (C) 4.8 (D) 3.2

SECTION-I**QUESTION NO. 2 Write short answers any Eight (8) questions of the following**

16

1	Why the basicity of IIA group metal oxides increases on descending a group of Periodic Table ?
2	Why diamond is non-conductor and graphite is fairly a good conductor of electricity?
3	Give the reactions of Mg metal with (a) N ₂ (b) H ₂ O at 100 °C
4	Why are liquid silicones preferred over ordinary organic lubricants ?
5	Why is CO ₂ a gas at room temperature while SiO ₂ solid.
6	Why semiconductors conduct electricity better than insulator?
7	Why is SO ₃ dissolved in H ₂ SO ₄ and not in water (H ₂ O) in contact process?
8	NO ₂ is a strong oxidizing agent .Prove the truth of this statement giving two examples.
9	How do you justify that N ₂ O is supporter of combustion , give two examples.
10	What is meant by ecosystem?
11	What are primary pollutants? Give at least two examples.
12	Define the term octane number. How octane number of gasoline is improved?

QUESTION NO. 3 Write short answers any Eight (8) questions of the following

16

1	Define paramagnetism? Which two transition metal ions have strongest paramagnetic behavior?
2	Define the term ligand with two examples?
3	How is cis-2-Butene prepared from an alkyne? Give its chemical reaction.
4	State Markonikov's rule with an example?
5	How will you distinguished chemically between toluene and benzene.
6	How is a Grignard's Reagent converted into 1-propanol and 2- propanol?
7	How does ethyl alcohol react with H ₂ SO ₄ in two different ways?
8	How is phenol prepared by Dow 's method?
9	How is lactic acid prepared from an aldehyde?
10	Write a reaction which is used to protect aldehyde group against alkaline oxidizing agent?
11	Write the structural formulae of these compounds (a) Phthalic acid (b) tartaric acid
12	How is acetamide prepared from acetic acid? Give its reaction mechanism.

QUESTION NO. 4 Write short answers any Six (6) questions of the following

12

1	What is the chemical nature of enzymes?
2	What is meant by rancidity of fats or oils?
3	Write structural formula of cholesterol.
4	What are clinkers?
5	Write down four qualities of a good fertilizer.
6	What are the prospects of paper industry in Pakistan?
7	What is "Iodized salt"?
8	Write two uses of helium.
9	Why is HF weaker acid than HCl ?

SECTION-II**Note: Attempt any Three questions from this section**

8 x 3 = 24

5-(A)	Define ionization energy. Give an example. How does it vary in groups and periods in Periodic Table ?
(B)	Describe the commercial preparation of sodium hydroxide by Diaphragm cell with diagram
6-(A)	Prepare KMnO ₄ by Stadelers process and Electrolytic oxidation process.
(B)	What are carbohydrates and how are they classified?
7-(A)	Explain Stability of Benzene.
(B)	Explain classification of organic compounds on the base of carbon skeleton.
8-(A)	Write down structural formulae for the products formed when 1-butene reacts with (i) Cold dil. KMnO ₄ / OH ⁻ (ii) HBr (iii) O ₂ in the presence of Ag ₂ O (iv) HOCl
(B)	How are monohydric alcohols classified? Write preparation of ethyl alcohol from molasses.
9-(A)	Give the reactions of ethyl magnesium bromide with the followings (i) CO ₂ (ii) C ₆ H ₅ CN (iii) HCHO (iv) (CH ₃) ₂ CO
(B)	Give four uses for each of formaldehyde and acetaldehyde.

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CHEMISTRY, GROUP SECOND
(NEW COURSE)

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TIME: 20 MINUTES
MARKS: 17

OBJECTIVE

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QUESTION NO. 1

- | | |
|----|---|
| 1 | Mark the correct statement
(A) Na^+ is smaller than Na atom (B) Na^+ is larger than Na atom (C) Cl is smaller than Cl atom
(D) Cl (ion) and Cl (atom) are equal in size |
| 2 | Which one of the following does not belong to alkaline earth metals?
(A) Be (B) Ra (C) Ba (D) Rn |
| 3 | Tinical is a mineral of
(A) Al (B) B (C) Si (D) C |
| 4 | Laughing gas is chemically
(A) NO (B) N_2O (C) NO_2 (D) N_2O_4 |
| 5 | Chlorine heptaoxide (Cl_2O_7) react with H_2O to form
(A) Hypochlorous acid (B) Chloric acid (C) Perchloric acid (D) Chlorine and Oxygen |
| 6 | Which of the following is a typical transition metal
(A) Sc (B) Y (C) Ra (D) Co |
| 7 | Select from the following the one which is an alcohol
(A) $\text{CH}_3 - \text{CH}_2 - \text{OH}$ (B) $\text{CH}_3 - \text{O} - \text{CH}_3$ (C) CH_3COOH (D) $\text{C}_2\text{H}_5 - \text{Br}$ |
| 8 | The formula of chloroform is
(A) CH_3Cl (B) CCl_4 (C) CH_2Cl_2 (D) CHCl_3 |
| 9 | During nitration of benzene the active nitrating agent is
(A) NO_3 (B) NO_2^+ (C) NO_2 (D) HNO_3 |
| 10 | In primary alkyl halides, the halogen atom is attached to a carbon which is further attached to carbon atoms. Indicate the number.
(A) Two (B) Three (C) One (D) Four |
| 11 | Which compound is called universal solvent?
(A) H_2O (B) CH_3OH (C) $\text{C}_2\text{H}_5\text{OH}$ (D) $\text{CH}_3 - \text{O} - \text{CH}_3$ |
| 12 | Ketones are prepared by the oxidation of
(A) Primary alcohol (B) Secondary alcohol (C) Tertiary alcohol (D) All of these |
| 13 | The solution of which acid is used for seasoning of food
(A) Formic acid (B) Acetic acid (C) Benzoic acid (D) Butanoic acid |
| 14 | The reaction between fat and NaOH is called
(A) Esterification (B) Hydrogenolysis (C) Fermentation (D) Saponification |
| 15 | Which is not a calcareous material?
(A) Lime (B) Clay (C) Marble (D) Marine shell |
| 16 | Peroxyacetyl nitrate (PAN) is an irritant to human beings and its effects
(A) Eyes (B) Ears (C) Stomach (D) Nose |
| 17 | To avoid the formation of toxic compounds with chlorine, which substance is used for disinfecting water?
(A) KMnO_4 (B) O_3 (C) Alums (D) Chloramines |

SECTION-I

QUESTION NO. 2 Write short answers any Eight (8) questions of the following

16

1	Write note on Lithosphere.
2	Define Primary and Secondary Pollutant.
3	Write composition of natural gas.
4	How NO acts as reducing agent? Give two examples
5	Justify that N ₂ O is a supporter of combustion, write two reactions.
6	Why SO ₃ gas is dissolved in H ₂ SO ₄ not in H ₂ O ?
7	Why Al is not found in free state ?
8	Justify that CO ₂ is acidic in nature.
9	How Borax is used as water softening agent?
10	What are advantages of KO ₂ for mountaineers?
11	Justify that ZnO is an amphoteric oxide.
12	Why Anion is bigger in size than its parent atom?

QUESTION NO. 3 Write short answers any Eight (8) questions of the following

16

1	Why does damaged tin plated iron get rusted quickly?
2	Under what conditions does aluminium corrode?
3	Write industrial preparation of Ethyne.
4	How are alkynes prepared from vicinal dihalides?
5	How can you prepare m-Chloronitrobenzene from benzene?
6	Write down a method for the preparation of ethyl magnesium bromide in the laboratory.
7	How can you distinguish Ethanol and Methanol? Give a chemical test.
8	Write structural formulae of lactic acid and tartaric acid.
9	Write general mechanism of base-catalysed nucleophilic addition reaction of carbonyl compound.
10	Write equations for the reactions of hydroxylamine with ethanal and acetone.
11	What are fatty acids? Give any two examples.
12	Write equations for reactions of acetic acid with PCl ₅ and SOCl ₂

QUESTION NO. 4 Write short answers any Six (6) questions of the following

12

1	Give any four uses of Bleaching Powder.
2	Why HF is a weaker acid than HCl?
3	What are Freon and Teflon?
4	What are thermosetting polymer ? Give two examples.
5	Give four points about the importance of lipids.
6	What are Epoxy Resins? Give an example.
7	What is lignin? Why it is necessary to remove it in pulp making?
8	Write any four essential qualities of a good fertilizer.
9	How digestive process is carried out in paper industry ?

SECTION-II

Note: Attempt any Three questions from this section

8 x 3 = 24

5-(A)	Discuss four Blocks in Modern Periodic Table?
(B)	Describe the preparation of sodium metal by Down's Cell with diagram.
6-(A)	Define Corrosion. Explain electrochemical theory of Corrosion in detail.
(B)	Explain two methods of purification of water.
7-(A)	What is Sp ² - mode of Hybridization? Explain the formation of Ethene by Sp ² Hybridization concept.
(B)	Describe the structure of Benzene on the basis of atomic orbital treatment .
8-(A)	Discuss the following terms with respect to alkenes with suitable chemical reactions. (i) Ozonolysis (ii) Hydroxylation
(B)	Name the test which is used for the identification of primary, secondary and tertiary alcohols and explain it with suitable example.
9-(A)	How does Ethyl magnesium bromide react with (i) CO ₂ (ii) CH ₃ CHO
(B)	Describe with mechanism aldol condensation reaction.