

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) The ionization energy of calcium is lower than that of barium
(B) The ionization energy of calcium is lower than that of magnesium
(C) The ionization energy of calcium is higher than that of beryllium
(D) The ionization energy of calcium is lower than that of strontium
- 2 Which of the following sulphates is not soluble in water?
(A) Sodium sulphate (B) Potassium sulphate (C) Barium sulphate (D) Zinc sulphate
- 3 Boric acid cannot be used
(A) As antiseptic in medicine (B) For washing eyes (C) In soda bottles (D) For enamels and glazes
- 4 Which catalyst is used in contact process?
(A) Fe_2O_3 (B) V_2O_5 (C) SO_3 (D) Ag_2O
- 5 The anhydride of HClO_4 is
(A) ClO_3 (B) ClO_2 (C) Cl_2O_7 (D) Cl_2O_5
- 6 Which of the following represents the correct electronic configuration of the outer most energy level of an element of (VIIA) in the ground state?
(A) S^2P^2 (B) S^2P^4 (C) S^2P^5 (D) S^2P^6
- 7 Group VIB of the transition elements contains
(A) Zn, Cd, Hg (B) Fe, Ru, Os (C) Cr, Mo, W (D) Mn, Te, Re
- 8 Ethers show the phenomenon of
(A) Position isomerism (B) Functional group isomerism (C) Metamerism (D) Cis-Trans isomerism
- 9 The addition of unsymmetrical reagent to an unsymmetric alkene follows the rule
(A) Hund's Rule (B) Pauli's Exclusion principle (C) Markownikoff's Rule (D) Aufbau Principle
- 10 The electrophile in aromatic sulphonation is
(A) H_2SO_4 (B) HSO_4 (C) SO_3^+ (D) SO_3
- 11 Which one of the following is not a nucleophile?
(A) H_2O (B) H_2S (C) NH_3 (D) BF_3
- 12 Which compound shows hydrogen bonding?
(A) C_2H_6 (B) $\text{C}_2\text{H}_5\text{Cl}$ (C) $\text{CH}_3\text{-O-CH}_3$ (D) $\text{CH}_3\text{CH}_2\text{-OH}$
- 13 Formalin is
(A) 60 % solution of formaldehyde in water (B) 10 % solution of formaldehyde in water
(C) 20 % solution of formaldehyde in water (D) 40 % solution of formaldehyde in water
- 14 The carbon atom of a carbonyl group is
(A) sp -hybridized (B) sp^2 -hybridized (C) sp^3 -hybridized (D) dsp^2 -hybridized
- 15 Acetic acid is manufactured by
(A) Distillation (B) Fermentation (C) Ozonolysis (D) Esterification
- 16 Which acid is used in the manufacture of synthetic fibre?
(A) Formic acid (B) Oxalic acid (C) Carbonic acid (D) Acetic acid
- 17 Micro Nutrients are required in a quantity ranging from
(A) 6 - 200 kg (B) 6 - 200 g (C) 4 - 40 kg (D) 60 - 400 kg

SECTION-I

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

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| 1. | Why Na^+ is smaller than Na atom ? |
| 2. | What do you know about S-block Elements ? Give two examples |
| 3. | Give two properties of Alkaline Earth metals |
| 4. | Give chemical formulas of Sylvite and Spodumene |
| 5. | What happens when Borax is dissolved in water ? |
| 6. | Give two uses of Boric Acid |
| 7. | Give two points regarding peculiar behaviour of carbon |
| 8. | Give two methods of preparation of NO_2 |
| 9. | Give two dissimilarities between oxygen and sulphur |
| 10. | What are nitrogenous fertilizers ? Give two examples |
| 11. | Why potassium fertilizers are important for plants ? Give one example of a potassium fertilizer |
| 12. | Define cement. Why is it called Portland cement ? |

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

16

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| 1. | How does oxidation state of halogen affect the acidic strength of oxyacids of halogen ? |
| 2. | Write factors affecting the oxidizing power of halogens |
| 3. | Write reactions of chlorine with cold and hot NaOH |
| 4. | Define substitutional alloys and give one example |
| 5. | Why transition elements show colour |
| 6. | Write objections to Kekule's formula of benzene |
| 7. | Compare the reactivity of benzene and alkene |
| 8. | How will you distinguish between methanal and ethanal ? |
| 9. | Write chemistry of Fehling's solution test |
| 10. | Write reactions of acetic acid with (a) PCl_5 (b) SOCl_2 |
| 11. | Give mechanism of esterification |
| 12. | Write manufacture of acetic acid from acetylene |

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

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| 1. | What is octane number of Gasoline ? |
| 2. | What is catalytic cracking ? |
| 3. | What is Sabatier-Senden's reaction ? Give its industrial importance |
| 4. | What is Clemmensen and Wolf-Kishner's reduction reaction |
| 5. | What is Wurtz synthesis ? Give its reaction |
| 6. | Draw structure of primary, secondary and tertiary alkyl halide from the given compound $\text{C}_6\text{H}_{13}\text{Cl}$ |
| 7. | Give the formation of ortho and para hydroxy benzene sulphonic acid from phenol |
| 8. | Why phenol is more acidic than that of alcohol |
| 9. | How will you convert methane into ethane ? |

SECTION-II

Note: Attempt any Three questions from this section

8 x 3 = 24

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| Q.5-(A) | Write similarities and differences of Halogens with Hydrogen |
| (B) | Explain construction and working of Diaphragm cell |
| Q.6-(A) | Briefly explain the following general characteristics properties of transition elements (i) Paramagnetism (ii) Binding Energies |
| (B) | What are dehydrogenating agents ? Give any four reactions in which sulphuric acid play the role of dehydrating agent |
| Q.7-(A) | Write a note on the cracking of Hydrocarbons |
| (B) | What types of Aldehydes give Cannizzaro's reaction ? Give its mechanism |
| Q.8-(A) | Give the preparation reactions of alkanes from (i) Carbonyl compounds (ii) Alkyl Halides |
| (B) | Explain the following terms by giving suitable examples (i) Nucleophile (ii) Electrophile (iii) Leaving group (iv) Substrate |
| Q.9-(A) | Write the nitration reaction of benzene with mechanism |
| (B) | How phenol is prepared from (i) Chlorobenzene (ii) Sodium salt of Benzene Sulphonic Acid |