

Note: There are three sections in this paper i.e A, B & C.

VERSION: A

- Instructions:**
- Please attempt Section-A on the MCOs Answer Sheet only.
 - Only black ball point or marker may be used for shading the relevant circle.
 - Please make sure that there is no cutting, over writing, erasing, or multiple circles shading.

Time Allowed: 20 Minutes

"Section - A"

Marks: 18

Q.1. Choose the correct option i.e A, B, C or D.

- An oxide of which element has a simple molecular structure.
☐ A Sodium ☐ B Magnesium ☐ C Silicon ☒ D Phosphorus
- Any Precipitate having pH less than 5.6 is known as.
☐ A Eutrophication ☐ B Sedimentation ☐ C Smog ☒ D Acid Rain
- All acid derivatives can be converted back into corresponding Carboxylic acid by.
☐ A Alcoholysis ☐ B Ammonolysis ☒ C Hydrolysis ☐ D Hydrogenolysis
- Ether are in Nature.
☐ A Acidic ☒ B Basic ☐ C Neutral ☐ D Amphiprotic
- The aqueous solution of which of the following is more basic.
☐ A NH_3 ☐ B CH_3NH_2 ☒ C $(\text{CH}_3)_2\text{NH}$ ☐ D $(\text{CH}_3)_3\text{N}$
- A substituent which is o/p directing, but de-activating is
☐ A $-\text{CH}_3$ ☐ B $-\text{OH}$ ☐ C NH_2 ☒ D $-\text{Br}$
- Heterolytic fission of a covalent bond forms.
☐ A Molecules ☐ B Atoms ☐ C Ions ☒ D Free radicals
- The self-linking property of carbon to form long chain and large rings is.
☐ A Aromaticity ☐ B Isomerization ☐ C Carbonation ☒ D Catenation
- Complexes of co-ordination number Six, have shapes.
☐ A Tetrahedral ☒ B Octahedral ☐ C Square planar ☐ D Trigonal pyramidal
- A property of hydrogen halides that decreases from HCl to HI, is
☐ A Acid strength ☐ B Reducing power ☐ C Bond length ☒ D Bond energy
- The number of NMR- proton in butanoic acid is.
☐ A 2 ☒ B 4 ☐ C 6 ☐ D 8
- Protein which hydrolyze into simple Amino acids or their derivatives are.
☒ A Simple ☐ B Conjugated ☐ C Complex ☐ D Derived
- Hydrolysis of nitriles with dilute mineral acid produces.
☒ A Carboxylic acid ☐ B Acid anhydrides ☐ C Primary amines ☐ D Secondary amines
- Ethers have boiling points higher than,
☐ A Primary amine ☐ B Alkyl Halides ☐ C Alcohols ☒ D Alkanes
- The rate of S_N^2 reaction of alkyl halides is independent of the nature of
☐ A Substrate ☐ B Nucleophile ☐ C Leaving group ☒ D Solvent
- A compound that can not show Cis-Trans isomerism is
☒ A 1,2-dichloro ethene ☐ B 1,2-dichloro cyclohexene ☐ C 1,1-dichloroethene ☐ D 2-butene
- The Oxidation number of Nickel in $[\text{Ni}(\text{CO})_4]$ complex is Chqre: 8168
☒ A Zero ☐ B +2 ☐ C +4 ☐ D +6
- Due to inert pair effect, tin and lead can show oxidation state of.
☐ A Zero ☒ B +2 ☐ C +4 ☐ D +6

P-348

MRD-12TH 16052025 (A-I)

Total Time: 3:00 Hours

Chemistry (Part-II)

Total Marks: 67

Time Allowed: 2.40 Hours

"Section – B"

Marks: 40

Q-2. Write short answers to any ten (10) of the following parts. All parts carry equal marks:-

- (i) What is ionization energy? Why ionization energy of phosphorous is higher than sulphur?
- (ii) Why Zn^{+2} salts are colorless and Cu^{+2} salts are colored?
- (iii) Write any four important features of organic compounds?
- (iv) What is meant by Metamerism and tautomerism?
- (v) What is geometrical isomerism? Write the two conditions for geometrical isomerism?
- (vi) Why tertiary alkyl halides usually follow SN^1 mechanism?
- (vii) How phenol reacts with bromine in polar and non-polar solvent?
- (viii) What are Clemmensen and Wolff-Kishner reduction reactions?
- (ix) How does the nature of substituent affect the acid strength of carboxylic acids?
- (x) What is the effect of pH and temperature on the activity of enzymes?
- (xi) What are addition and condensation polymers?
- (xii) What is photochemical smog? How is it formed?
- (xiii) What is the significance of the fingerprint region and functional group region in IR spectrum?
- (xiv) How is ether prepared from alcohols?

"Section – C"

Marks: 27

Note: Answer any three (3) questions. All questions carry equal marks:-

- Q-3. Discuss the trend in solubility of the hydroxides, sulphates and carbonates of alkaline earth metals?
- Q-4. Discuss in detail nitration, Sulphonation and halogenation of benzene with suitable mechanism?
- Q-5. What is Grignard's reagent? Discuss its preparation and chemical reactions with aldehydes, Ketones and carbon dioxide? Chqrc- 8168
- Q-6. Discuss the structure and oxidation reactions of aldehyde and ketones?