

AAMIR SIR'S IMPULSE EDUCATIONS
SARTHAK BOARDS TEST SERIES

STD: 12TH SCI.

PRELIM PAPER

MARKS: 70

SUBJECT: CHEMISTRY

SET 1

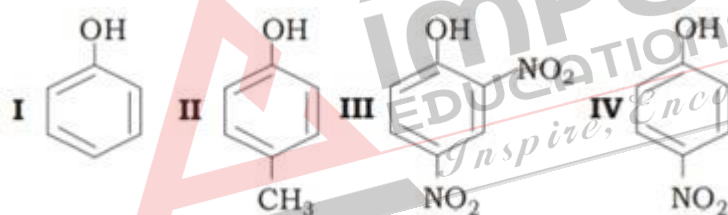
TIME: 3 HRS.

Section A (MCQ & VSA 1 MARKS Questions)

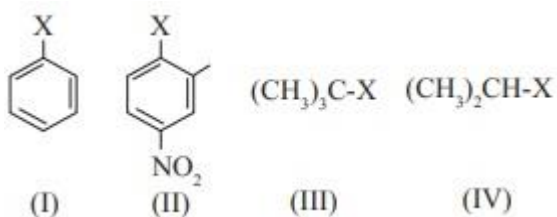
Q.1 Select and write the correct answer:

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- (i) The fraction of total volume occupied by atoms in a simple cubic is-
a. $\pi/2$ b. $\sqrt{3} \pi/8$ c. $\sqrt{2} \pi/6$ d. $\pi/6$
- (ii) Hess law of heat summation includes
a. Initial reactants only b. Initial reactants and final products
c. Final products only d. Intermediates only
- (iii) For an endothermic reaction, $X \rightleftharpoons Y$. If E_f is activation energy of the forward reaction and E_r that for reverse reaction, which of the following is correct?
a. $E_f = E_r$ b. $E_f < E_r$ c. $E_f > E_r$ d. $\Delta H = E_f - E_r$ is negative
- (iv) The molal freezing point constant of water is 1.86 K m^{-1} . If 342 g of cane sugar is dissolved in 1000 g of water, the solution will freeze at
a. -360.97 K b. 1.86°C c. -3.92°C d. 2.42°C
- (v) The electron gain enthalpy of noble gases
a. 0 b. less than 0
c. greater than 0 d. either 0 or less than 0
- (vi) Strength of acidity is in order



- a. $\text{II} > \text{I} > \text{III} > \text{IV}$ b. $\text{III} > \text{IV} > \text{I} > \text{II}$
c. $\text{I} > \text{IV} > \text{III} > \text{II}$ d. $\text{IV} > \text{III} > \text{I} > \text{II}$
- (vii) Most stable oxidation state of Titanium is
a. +2 b. +3 c. +4 d. +5
- (viii) Acetylcholine is a
a. Primary amine b. Secondary amine
c. Tertiary amine d. quaternary ammonium salt
- (ix) The correct order of increasing reactivity of C-X bond towards nucleophile in the following compounds is



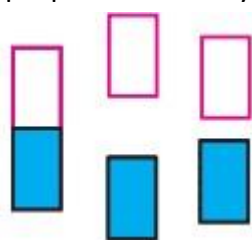
- a. $\text{I} < \text{II} < \text{III} < \text{IV}$ b. $\text{II} < \text{I} < \text{III} < \text{IV}$ c. $\text{III} < \text{IV} < \text{II} < \text{I}$ d. $\text{IV} < \text{III} < \text{I} < \text{II}$

- (x) Electronic configuration of Cu and Cu⁺¹
a. 3d¹⁰, 4s⁰; 3d⁹, 4s⁰ b. 3d⁹, 4s¹; 3d⁹4s⁰
c. 3d¹⁰, 4s¹; 3d¹⁰, 4s⁰ d. 3d⁸, 4s¹; 3d¹⁰, 4s⁰

Q.2 Answer the following:

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- (i) Two liquids A and B on mixing produce a warm solution. Which type of deviation from Raoult's Law does it show?
- (ii) What is the rate determining step?
- (iii) The following pictures show population of bands for materials having different electrical properties. Classify them as insulator, semiconductor or a metal.



- (iv) Arrange the following in the increase order of boiling points
a. 1-Bromopropane b. 2- Bromopropane
c. 1- Bromobutane d. 1-Bromo-2-methylpropane

- (v) Why are ethers insoluble in water?
- (vi) Why free radical mechanism is known as a chain reaction?
- (vii) Out of Cu₂Cl₂ and CuCl₂, which is more stable and why?
- (viii) Write the uses of Glyptal.

Section B (SA I - 2 MARKS EACH)

Attempt any Eight:

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- Q.3** $2 \text{NOBr(g)} \rightarrow 2 \text{NO}_2 \text{(g)} + \text{Br}_2 \text{(g)}$, the rate law is $\text{rate} = k[\text{NOBr}]^2$. If the rate of the reaction is $6.5 \times 10^{-6} \text{ mol L}^{-1} \text{ s}^{-1}$ when the concentration of NOBr is $2 \times 10^{-3} \text{ mol L}^{-1}$. What would be the rate constant for the reaction?
- Q.4** Calculate the spin only magnetic moment of divalent cation of a transition metal with atomic number 25.
- Q.5** Write two points of difference between properties of phenol and ethyl alcohol.
- Q.6** What are anode and cathode of H₂ - O₂ fuel cell ? Name the electrolyte used in it. Write electrode reactions and net cell reaction taking place in the fuel cell.
- Q.7** Identify Thermoplastic and Thermosetting Plastics from the following -----
1. PET
2. Urea formaldehyde resin
3. Polythene
4. Phenol formaldehyde
- Q.8** Observe the following equation of reaction of Tollens' reagent with aldehyde. How do we know that a redox reaction has taken place. Explain.

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Vapour pressure of pure water at 35°C is 31.82 mm Hg. When 27.0 g of solute is dissolved in 100 g of water (at same temperature), vapour pressure of solution thus formed is 30.95 mm Hg. Calculate molecular mass of the solute.

- Q.30** When two moles of ethane are burnt, 3129 kJ of heat is liberated. Calculate the heat of formation of ethane, when enthalpy of formation of CO₂ and H₂O are -393.5 and -286 kJ/mol.



Two moles of CO and one mole of O₂ are taken in a container of volume 1L. They completely react to form two moles of CO₂. If the pressure in the vessel changes from 70 to 40 atm, find out the magnitude of ΔU at 500K.

- Q.31** [CoCl₄]²⁻ is tetrahedral complex. Draw its box orbital diagram.
State which orbitals participate in hybridization.

----- All the Best -----

