

The correct order of $[H^+]$ ions in these solutions is

- A. $IV > I > V > III > II$ B. $IV < I < V < III < II$
 C. $III < I < IV < II < V$ D. $I > III > II > V > IV$.

28. Which of the following statements are correct?
 (Given : At. wt. of Ca = 40 u, Mg = 24 u, N = 14 u, H = 1 u, Na = 23 u, Cl = 35.5 u)

- I. 5.6 g of oxygen gas occupies 3.92 L of volume at STP.
 II. 17 g of NH_3 contains more atoms than 56 g of N_2 .
 III. Total number of ions in 2.5 g of sodium chloride is 5.15×10^{22} .
 IV. Molar ratio of 150 g of calcium to 150 g of magnesium is 5 : 3.
 A. II and IV only B. I and III only
 C. I and II only D. I, II, III and IV

29. Which of the following represent(s) oxidation-reduction reaction?

- I. $Mg_{(s)} + Zn_{(aq)}^{2+} \rightarrow Mg_{(aq)}^{2+} + Zn_{(s)}$
 II. $CH_{4(g)} + 2O_{2(g)} \rightarrow CO_{2(g)} + 2H_2O_{(l)}$
 III. $NaOH_{(aq)} + HCl_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(l)}$
 IV. $Cl_{2(g)} + S_{(aq)}^{2-} \rightarrow S_{(s)} + 2Cl_{(aq)}^-$
 A. I, II and IV only B. I and II only
 C. III only D. I, II, III and IV

30. Identify the incorrect statement(s).

- I. Dalton's atomic theory proposed that the atoms combine in the ratio of small whole numbers to form compounds.
 II. The mass of an atom is expressed relative to the mass of a reference atom, so that the atomic mass becomes a simple number.
 III. For ethanol and dimethyl ether having same ratio of combining elements, law of constant proportions is applicable.
 IV. One twelfth ($1/12^{th}$) of the mass of one atom of carbon-12 is taken as one unit and is called as one atomic mass unit.
 A. I and II only B. III and IV only
 C. III only D. I, II and IV only

31. Read the given statements and select the correct option.
 Statement 1 : According to Mendeleev, the properties of elements are the periodic function of their atomic masses.

Statement 2 : Atomic number is equal to the number of protons.

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
 B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
 C. Statement 1 is true and statement 2 is false.
 D. Both statements 1 and 2 are false.

32. For the same number of carbon atoms, three hydrocarbons X, Y and Z have hydrogen in the ratio 2 : 3 : 1. Which of the following statements are correct about the reactions shown by X, Y and Z?

- I. Both X and Z decolourise bromine water.
 II. Y does not undergo substitution reactions.
 III. Both X and Z give white precipitate on reaction with $AgNO_3$ solution dissolved in NH_4OH .
 IV. Both X and Z undergo catalytic hydrogenation to give Y.
 A. II and III only B. II and IV only
 C. I and IV only D. I, II, III and IV

33. Match column I with column II and select the correct option from the given codes.

Column I (Substances)	Column II (Uses)
P. Washing soda	(i) In fire-extinguishers
Q. Plaster of Paris	(ii) For degreasing metals
R. Baking soda	(iii) In making fire-proof materials
S. Caustic soda	(iv) Removing permanent hardness of water

A. P-(iv), Q-(i), R-(iii), S-(ii)
 B. P-(iii), Q-(ii), R-(i), S-(iv)
 C. P-(iv), Q-(iii), R-(i), S-(ii)
 D. P-(ii), Q-(iv), R-(iii), S-(i)

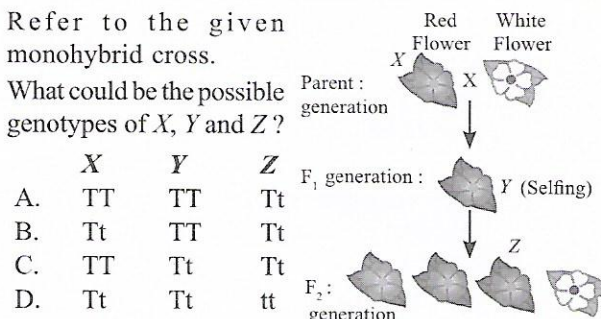
34. Melting and boiling points of five different substances are given in the table.

Substance	Melting point ($^{\circ}C$)	Boiling point ($^{\circ}C$)
V	-223	-185
W	110	420
X	-27	85
Y	-20	172
Z	-32	320

Fill in the blanks by selecting an appropriate option.
 Substance (i) will have the least ordered arrangement of particles at room temperature. Substances (ii), (iii) and (iv) have a fixed volume but no fixed shape at room temperature. Substance (v) is solid at $100^{\circ}C$ and is liquid at $200^{\circ}C$.

- (i) (ii) (iii) (iv) (v)
 A. V Z X Y W
 B. V W X Z Y
 C. W X Y Z V
 D. X V W Z Y

35. Refer to the given monohybrid cross.



36. Study the given characteristics of organisms P, Q and R and identify them.