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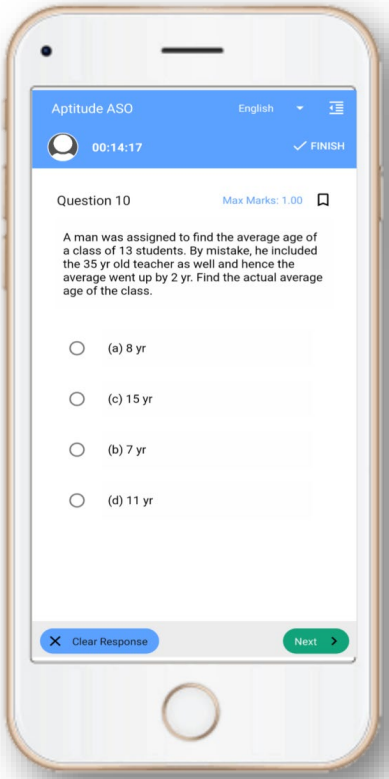

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B – SECTION – III

SCIENCE (PCM)

CHEMISTRY

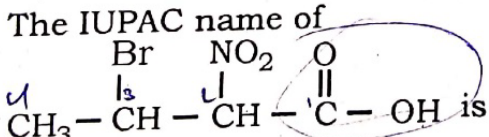
61. The mineral of iron is
(A) Malachite
(B) Cassiterite
(C) Magnetite
(D) Pyrolusite

62. The solubility product constant expression for $Ag_3PO_4 \rightleftharpoons 3Ag^+ + PO_4^{3-}$ is
(A) $K_{sp} = [Ag^+][PO_4^{3-}]$
(B) $K_{sp} = [Ag^+][PO_4^{3-}]^3$
(C) $K_{sp} = [3Ag^+]^3[PO_4^{3-}]$
(D) $K_{sp} = 3[Ag^+][PO_4^{3-}]$

63. Among following reactions, an example of calcination process is
(A) $FeO + SiO_2 \rightarrow FeSiO_3$
(B) $Fe_2O_3 + 3C \rightarrow 2Fe + 3CO$
(C) $2ZnS + 3O_2 \rightarrow 2ZnO + 2SO_2$

(D) $MgCO_3 \rightarrow MgO + CO_2$

64. The IUPAC name of



(A) 3-Bromo-2-Nitro butanoic acid
(B) 3-Nitro-2-Bromo butanoic acid
(C) 4-Bromo-3-Nitro butanoic acid
(D) 1-Carboxy-2-Nitro-3-Bromo propane

65. A small drop of liquid is spherical in shape due to
(A) low viscosity
(B) surface tension
(C) hydrogen-bonding
(D) low density

66. According to VSEPR theory, the shape of XeF_4 molecule is
(A) Octahedral
(B) Square planar
(C) Linear
(D) Tetrahedral

67. The alkane obtained by the electrolysis of aqueous concentrated solution of sodium acetate is
(A) CH_4
(B) $CH_3CH_2CH_3$
(C) $CH_3CH_2CH_2CH_3$
(D) CH_3CH_3

68. The reaction between HCl and Na_2CO_3 is represented by the equation
$Na_2CO_3 + 2HCl \rightarrow 2NaCl + CO_2 + H_2O$
If 25 ml of 0·05 N Na_2CO_3 solution is neutralized by 50 ml of HCl, the concentration of HCl is
(A) 0·01 N (B) 0·025 N
(C) 0·1 N (D) 0·05 N

69. The oxidation number of an element in a compound is evaluated on the basis of certain rules. Which of the following rules is not correct in this respect ?
(A) Oxidation number of hydrogen is always + 1
(B) Algebraic sum of oxidation number of all elements in the compound is zero
(C) An element in the free or uncombined state has zero oxidation number
(D) In all compounds oxidation number of fluorine is – 1

70. Among the species H_3O^+, NH_3, BeH_2, BCl_3, the central atom of one that undergoes sp^2-hybridisation is
(A) H_3O^+ (B) BCl_3
(C) NH_3 (D) BeH_2

71. The correct order of electron affinity among halogens is
(A) F > Cl > Br > I
(B) Cl < F > Br > I
(C) Cl > F > Br > I
(D) F > Br > Cl > I

72. The volume of a gas increases from 150 ml to 450 ml on heating. If the original temperature of the gas is 300 K, up to what temperature the gas has been heated ?
(A) 300 K (B) 600 K
(C) 450 K (D) 900 K

73. The reaction in which two compounds exchange their ions to form two new compounds is an example of
(A) displacement reaction
(B) combination reaction
(C) double displacement reaction
(D) redox reaction

74. Arrange the following species from left to right in the increasing order of their ionic radii.
Na^+, F^-, Mg^{2+}, O^{2-}.
(A) $F^- < Mg^{2+} < Na^+ < O^{2-}$
(B) $Mg^{2+} < Na^+ < F^- < O^{2-}$
(C) $Na^+ < O^{2-} < F^- < Mg^{2+}$
(D) $Mg^{2+} < Na^+ < O^{2-} < F^-$

75. The correct order of stability of the carbocations
I. CH_3^+
II. $(CH_3)_3C^+$
III. $CH_3 - CH_2^+$ and
IV. $(CH_3)_2\overset{+}{C}H$ is
(A) I > III > IV > II
(B) II > III > IV > I
(C) I > IV > II > III
(D) II > IV > III > I

76. The arrangement of the following in the increasing order of their masses is

I. 1·5 mole of O_2

II. 0·5 g atom of oxygen

III. $3·01 \times 10^{23}$ molecules of oxygen

IV. 5·6 litres of CO_2 at STP.

(A) II < I < IV < III

(B) IV < II < III < I

(C) II < IV < III < I

(D) I < II < III < IV.

77. Which set of quantum numbers correctly defines one electron in an atomic orbital with $n = 2$, $l = 0$?

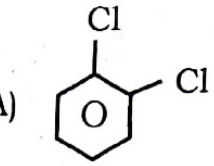
(A) $n = 2 \quad l = 0 \quad m = 0 \quad s = +1$

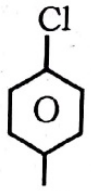
(B) $n = 2 \quad l = 0 \quad m = 0 \quad s = +\frac{1}{2}$

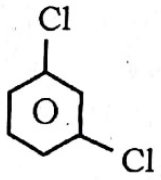
(C) $n = 2 \quad l = 0 \quad m = 1 \quad s = +\frac{1}{2}$

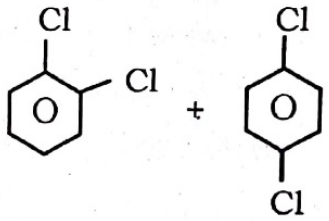
(D) $n = 2 \quad l = 0 \quad m = 1 \quad s = -\frac{1}{2}$

78. The product(s) obtained by the reaction of chlorobenzene with Cl_2 in presence of $FeCl_3$ is (are)

(A) 

(B) 

(C) 

(D) 

79. Which of the following rules explains the presence of maximum number of unpaired electrons in a given subshell ?

(A) Octet rule

(B) Pauli's exclusion principle

(C) Hund's rule

(D) Aufbau principle

80. $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

At equilibrium, if the pressure is increased at constant temperature, there will be an increase in number of molecules of

(A) $N_2(g)$ only

(B) $H_2(g)$ only

(C) $NH_3(g)$ only

(D) both $N_2(g)$ and $H_2(g)$