PARISHRAM PUBLICATIONS
PUNE

NAME of Student : _____

Subject : Chemistry

Class : XI   Max. Marks :- 100

Topic : Some Basic Concepts of Chemistry

Chapter Test 1

Marking Scheme:
(i)   Each question is allotted 4 (four) marks for each correct response.
(ii) ¼ (one fourth) marks will be deducted for indicating incorrect response of each question. No deduction from the total score will be made if no response is indicated for an item in the answer sheet.
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Q.1 The equivalent weight of $KMnO_4$ in acidic medium is –
(A) 158   (B) 52.67
(C) 31.6   (D) 49

Q.2 The value of 1u is equal to –
(A) 1.66×10^{-24} g   (B) 12.00 g
(C) 1.9924×10^{-24} g   (D) 1.0 g

Q.3 In a compound C, H and N are present in 9 : 1 : 3.5 by weight. If molecular weight of the compound is 108, then the molecular formula of the compound is –
(A) $C_2H_6N_2$ (B) C_3H_4N
(C) $C_6H_8N_2$ (D) $C_9H_{12}N_3$

Q.4 The total number of protons in 10g of calcium carbonate is ($N_0 = 6.023 \times 10^{23}$)
(A) 3.01×10^{24} (B) 4.06×10^{24}
(C) 2.01×10^{24} (D) 3.02×10^{24}

Q.5 120g of urea is present in 5L of solution. The active mass of urea is –
(A) 0.06   (B) 0.2
(C) 0.4   (D) 0.8

Q.6 One mole of CH_4 contains –
(A) 4g atoms of hydrogen
(B) 3.0g atoms of carbon
(C) 6.02×10^{23} atoms of hydrogen
(D) 1.81×10^{23} molecules of CH_4

Q.7 $KO_2 + H_2O \longrightarrow KOH + H_2O_2 + O_2$.
14.2gm. KO_2 when treated with excess H_2O, it gives only 1.7gm H_2O_2. So % yield of H_2O_2 should be –
(A) 20%   (B) 30%
(C) 40%   (D) 50%

Q.8 A chemist decided to determine the Empirical formula of an unknown compound. He collects following informations :
(i) Compound contains 2 : 1 ratio of H and O atoms (number of atoms)
(ii) Compound has 40% C by mass
(iii) Compound contains C, H and O only
What is the empirical formula of the compound –
(A) CH_3O (B) CH_2O
(C) C_2H_2O (D) CH_3O_2

Q.9 Which of the following molarity values of ions in an aqueous solution of 5.85% w/v NaCl, 5.55% w/v $CaCl_2$ and 6% w/v NaOH are incorrect.
(A) $[Cl^{-1}] = 2M$ (B) $[Na^+] = 1M$
(C) $[Ca^{2+}] = 0.5M$ (D) $[OH^-] = 1.5M$

For Q.10-Q.12
The strength of H_2O_2 is expressed in several ways like molarity, normality, % (w/V),, volume strength, etc. The strength of "10V" means 1 volume of H_2O_2 on decomposition gives 10 volumes of oxygen at STP or 1 litre of H_2O_2 gives 10 litre of O_2 at STP. The decomposition of H_2O_2 is shown as under :

$$H_2O_2\ (aq) \rightarrow H_2O\ (\ell) + \frac{1}{2} O_2\ (g)$$
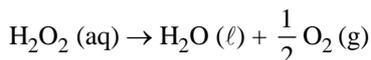
H_2O_2 can acts a oxidising as well as reducing agent, as oxidizing agent H_2O_2 converted into H_2O and as reducing agent H_2O_2 converted into O_2 both cases it's n-factor is 2.
∴ Normality of H_2O_2 solution
= 2 × Molarity of H_2O_2 solution

Q.10 What is the molarity of "11.2V" of H_2O_2 ?
(A) 1M   (B) 2M
(C) 5.6M   (D) 11.2M

Q.11 What is the percentage strength (% w/V) of 11.2V H_2O_2 ?
(A) 1.7   (B) 3.4
(C) 34   (D) None of these

Q.12 20mL of H_2O_2 solution is reacted with 80mL of 0.05M $KMnO_4$ in acidic medium then what is the volume strength of H_2O_2 ?
(A) 2.8   (B) 5.6
(C) 11.2   (D) None of these

Q.13 1.296g of silver metal was displaced when 0.382g of copper was added to the solution of silver sulphate. If the eq. wt. of the silver metal is 108, find that of copper.
(A) 31.83   (B) 35.12
(C) 48.34   (D) 25.12

Q.14 Assuming fully decomposed, the volume of CO_2 released at STP on heating 9.85g of $BaCO_3$
(Atomic mass, Ba = 137) will be –
(A) 2.24 L   (B) 4.96 L
(C) 1.12 L   (D) 0.84 L

Q.15 Which has maximum number of molecules –
(A) 7gm N_2 (B) 2gm H_2
(C) 16gm NO_2 (D) 16gm O_2

Q.16 In Haber process : $N_2 + 3H_2 \rightarrow 2NH_3$

30 litres of dihydrogen and 30 litres of dinitrogen were taken for reaction which yielded only 50% of the expected product. What will be the composition of gaseous mixture under the aforesaid condition in the end –
(A) 20 litres ammonia, 25 litres nitrogen, 15 litres hydrogen
(B) 20 litres ammonia, 20 litres nitrogen, 20 litres hydrogen
(C) 10 litres ammonia, 25 litres nitrogen, 15 litres hydrogen
(D) 20 litres ammonia, 10 litres nitrogen, 30 litres hydrogen

Q.17 Concentrated aqueous sulphuric acid is 98% H_2SO_4 by mass and has a density of 1.80 g mL^{-1}. Volume of acid required to make one litre of 0.1 H_2SO_4 solution is –
(A) 16.65 mL   (B) 22.20 mL
(C) 5.55 mL   (D) 11.10 mL

Q.18 Use the law of multiple proportion to consider possible formula for compounds made from two elements, X and Y, in the proportions listed below.
Compound A : 1.0g of X reacted with 2.1g of Y.
Compound B : 1.0g of X reacted with 6.3g of Y.
Which of the following sets of formulas is possible ?
(A) A : X_2Y_3, B : X_2Y_9 (B) A : XY, B : XY_2
(C) A : X_6Y_2, B : XY   (D) A : XY, B : X_2Y_3

Q.19 How many mol of electrons will have total charge equal to 4816 coulomb.
(A) 0.05 mole   (B) 5 mole
(C) 6.95×10^{-21} mol   (D) 0.01 mole

Q.20 Which of the following contains maximum number of molecules?
(A) 1g CO_2 (B) 1g N_2
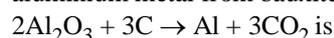(C) 1g H_2 (D) 1g CH_4

For Q.21-Q.25 :
The answer to each question is a NUMERICAL VALUE.

Q.21 The fraction of the mass of water due to neutrons is (X/18). Find the value of X.

Q.22 What mass (in gm) of $H_2(g)$ is needed to reduce 192gm. of MoO_3 to metal ? [At. wt. of Mo = 96]

Q.23 The mass (in kg) of carbon anode consumed (giving only carbondioxide) in the production of 270 kg of aluminium metal from bauxite by the Hall process
$2Al_2O_3 + 3C \rightarrow Al + 3CO_2$ is
(Atomic mass : Al = 27)

Q.24 The equivalent weight of $NaHCO_3$ is –

Q.25 Number of atoms of He in 100u of He
(Atomic wt. of He is 4) are –