OROMIA IFA BORU SPECIAL BOARDING SCHOOL@2016/2024
CHEMISTRY WORKSHEET FOR GRADE-11 SUMMER CLASS PROGRAM
[FROM G-9 SELECTED TOPICS]

I. CHOOSE THE MOST APPROPRIATE ANSWER FROM THE GIVEN ALTERNATIVES

1. Among the following reaction one is example of exothermic chemical reaction. Which one is it?
   A. Melting of ice C. Photosynthesis takes place in green plants
   B. Combustion of gasoline D. Evaporation of water
2. In a chemical reaction, what is the relationship between the total mass of the reactants and the total mass of the products?
   A. The mass of the reactants must be greater. C. The mass of the products must be greater
   B. They must be equal. D. There is no general relationship between the two.
3. Which of the following metal is most violently reacting with water?
   A. Silver B. Mercury C. Potassium D. Copper
4. What is the correct name of a compound with molecular formula, Ca_3P_2?
   A. Calcium phosphate B. Calcium phosphite C. Calcium phosphide D. Tricalcium diphosphate
5. Which of the following statement is true regarding endothermic reactions?
   A. The energy of the products is lower than the energy of the reactants
   B. Heat content for the products is less than those of reactants. Thus, ΔH is negative
   C. The energy of the products is higher than the energy of the reactants
   D. Heat is released from the systems to the surroundings when reactions were taking place
6. Which of the following hypothetical reaction correctly designating a single-displacement reaction?
   A. $AX + BY \rightarrow AY + BX$ C. $A + B \rightarrow AB$
   B. $AB \rightarrow A + B$ D. $A + BX \rightarrow AX + B$
7. A suspended solid produced by a chemical reaction in solution & that tends to be separates from the solution is said to be:
   A. A molecule B. A precipitate C. A reactant D. The mass of the product
8. The reaction $2HgO(s) \rightarrow 2Hg(l) + O_2(g)$ would be:
   A. Single-replacement rxn. B. Ionic rxn. C. Synthesis rxn. D. Decomposition rxn.
9. In the reaction between **$Ba(OH)_2(aq)$** and **$K_2SO_4(aq)$**, which substance is not formed?
   A. $BaSO_4(s)$ B. KOH(aq) C. There are exchanges of Ba^{2+} and $2K^+$ D. $BaCO_3(s)$
10. A neutralization reaction between an acid and a metal hydroxide produces:
    A. Hydrogen gas B. Salt and water C. Oxygen gas D. Sodium hydroxide
11. The study of mass relationships among reactants and products in a chemical reaction is known as:
    A. Stoichiometry B. Stigmatism C. Electron configuration D. Periodic law
12. A balanced chemical equation allows one to determine directly:
    A. An energy either supplied or released in the reaction
    B. Electron configuration of all elements in the reaction
    C. The mole ratio of any two substances in the reaction
    D. The step-by-step description of chemical reaction
13. If 0.004 moles of NaI (aq) is reacted with equal moles of $Pb(NO_3)_2$, how many moles of $PbI_2(s)$ of produced?
    A. 0.0025 moles B. 0.0050 moles C. 0.001 moles D. 0.002 moles

14. Which of the following diagram is correctly indicating an endothermic chemical reaction?

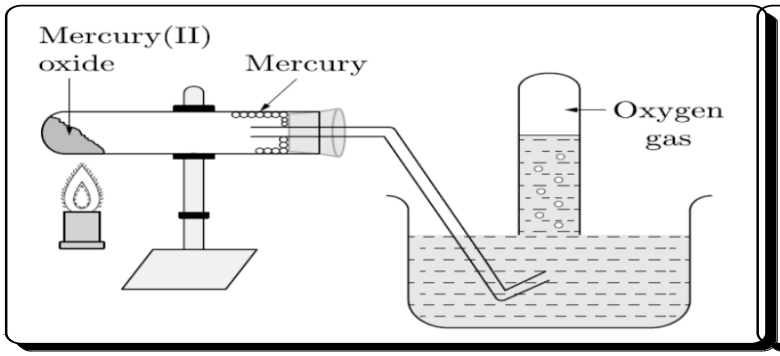


15. The reaction $2Mg(s) + O_2(g) \rightarrow 2MgO(s)$ is an example of:
    A. Synthesis rxn. B. Single-replacement rxn. C. Decomposition rxn. D. Double-replacement rxn.
16. Comparatively large pieces of firewood can be combusted slowly than sawdust /small pieces of firewood which burn explosively. The primary difference between the two firewood's would be:
    A. Large pieces of firewood have greater surface area than small pieces of firewood per kilogram
    B. Large pieces of firewood have smaller surface area than small pieces of firewood per kilogram
    C. Large pieces of firewood absorb more atmospheric moisture per kilogram
    D. Large pieces of firewood contain more compounds those have higher heat of combustion
17. What are the missing coefficients for the skeleton equation below?
    $Al_2(SO_4)_3(aq) + KOH(aq) \rightarrow Al(OH)_3(aq) + K_2SO_4(aq)$
    A. 1, 3, 2 & 3 B. 1, 6, 4 & 8 C. 1, 6, 2 & 3 E. 2, 3, 1 & 1
18. Which of the following reactions is a combination reaction?
    A. $AgNO_3\,(aq) + HCl\,(aq) \rightarrow AgCl\,(s) + HNO_3\,(aq)$ C. $2H_2O\,(l) \rightarrow 2H_2(g) + O_2\,(g)$
    B. $Na_2O\,(s) + CO_2\,(g) \rightarrow Na_2CO_3\,(s)$ D. $C_3H_8\,(g) + 5O_2\,(g) \rightarrow 3CO_2\,(g) + 4H_2O\,(l)$
19. In the chemical reaction $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$, there are reactants on the left of the equation and products on the right. If you count the atoms in the reactants, there are:
    A. 4-carbon atoms, 4-hydrogen atoms, and 2-oxygen atoms
    B. 1-carbon atom, 4-hydrogen atoms, and 2-oxygen atoms
    C. 1-carbon atom, 4-hydrogen atoms, and 4-oxygen atoms
    D. 4-carbon atoms, 4-hydrogen atoms, and 4-oxygen atoms
20. In a chemical reaction, mass is conserved. This means that:
    A. The molecules of the reactants do not change during a chemical reaction.
    B. The mass of the products stays the same during a chemical reaction.
    C. The type and number of atoms in the reactants equals the type and number of atoms in the products.
    D. The mass of the products is always twice the mass of the reactants.

21. When carbon dioxide (CO_2) gas reacts with water
    A. A strong base is produced
    B. The carbon and oxygen atoms disappear
    C. An acid is produced
    D. More carbon and oxygen atoms are produced
22. Assuming that a given reaction is **exorgenic**, which of the following statement is correct?
    A. It takes more energy to break the bonds of the reactants than is released when the bonds in the products are formed.
    B. More energy is released when the bonds in the products are formed than is used to break the bonds in the reactants.
    C. The same amount of energy is used to break the bonds of the reactants as is released when the bonds in the products are formed.
    D. While the reaction is on progress, the temperature goes down.
23. Which of the following is **true** concerning the decomposition of simple ionic compounds?
    A. The products are unpredictable. C. Only single products will be formed
    B. Require heat energy D. Exothermic reaction
24. Simera is a grade nine student. She performed experiment in chemistry laboratory independently. She weighed 5.00g of aluminium on electronic beam balance and also measured 20.00ml of hydrochloric acid using measuring cylinder. Then after, she transferred weighted aluminium in to the measured hydrogen chloride found in the flask gently and immediately she swilled the solution for certain seconds. Which of the following statement is correctly stated? [Use M.Wt. Al = 27g/mol, Cl = 35.5, H= 1.00g/mol]
    A. 2.00 moles of **Al** is chemically reacted with equal moles of **HCl** & yield 3.00 moles of **$AlCl_3$** & 3 moles of oxygen gas
    B. 2.00 moles of **Al** is chemically reacted with 4.00 moles of **HCl** & yield 2.00 moles of **$AlCl_3$** & 1.50 moles of hydrogen gas
    C. 2.00 moles of **Al** is chemically reacted with 6.00 moles of **HCl** & yield 2.00 moles of **$AlCl_3$** & 3.00 moles of hydrogen gas
    D. 27.00g/mol of **Al** combined with 36.5g/mol & provide 133.50g/mol of **$AlCl_3$** & 2.00g/mol of **H** gas.
25. In the chemical reaction equation i.e. **PCl_5 (s) + XH_2O (l) $\longrightarrow$ Y H_3PO_4 (aq) + W HCl (aq)**. What is the value of **X**, **Y** and **W** respectively?
    A. 1, 6, 5 B. 4, 3, 3 C. 1, 4, 5 D. 5, 1, 2
26. Which of the following is true regarding a precipitation reaction?
    A. Both products must be soluble in water
    B. At least one of the products will be insoluble in water
    C. Spectator ions are always included in the reaction
    D. Electrons are gained and lost

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27. The reaction between lime (CaO) & silica (SiO_2) that provide calcium silicate ($CaSiO_3$) will be:
    A. Decomposition reaction C. Combination reaction
    B. Single displacement reaction D. Double displacement reaction
28. The diagram given below represents --------- type of chemical reaction?



A. Single displacement reaction
B. Decomposition reaction
C. Synthesis reaction
D. Metathesis reaction

29. Stoichiometry is:
    A. The qualitative r/ships b/n reactants & products described before completion of the reaction.
    B. The qualitative /ships b/n reactants & products described after completion of the reaction.
    C. The quantitative r/ships b/n reactants & products described after completion of the reaction.
    D. The coefficients of reactants & products to be destroyed after completion of the reaction.
30. The redox reaction $\mathbf{Fe_2O_3 + C_2O_4^{2-} \rightarrow Fe + CO_2}$ takes place in acidic condition. How many electrons are gained in the balanced redox-reaction?
    A. 8 electrons B. 12 electrons C. 6 electrons D. 2 electrons
31. What is the oxidation number of iron in $\mathbf{K_4[Fe(CN)_6]}$?
    A. -2 B. +3 C. +2 D. 0
32. Which of the following statement is **incorrect**?
    I. Oxidation numbers of monoatomic ions are equal to the charge in which they bear.
    II. The oxidation number of **H** in $\mathbf{NaAlH_4}$ is plus one **(+1).**
    III. The sum of oxidation number of neutral compound is equal to **zero (0.00)**.
    IV. The oxidation number of oxygen (**O**) in $\mathbf{Li_2O_2}$ is **-2**
    A. Only III B. Only I & III C. Only I D. Only II & IV 11.
33. Which of the following inorganic compound is not used as oxidizing agent in chemistry laboratory?
    A. Potassium permanganate C. Nitric acid
    B. Sodium dichromate D. Sodium thiosulphaste
34. Which one of the following reactions is a redox reaction?
    A. $Pb^{2+}(aq) + 2Cl^-(aq) \rightarrow PbCl_2(s)$
    B. $NaOH(aq) + HCl(aq) \rightarrow NaCl(aq) + H_2O(l)$
    C. $AgNO_3(aq) + HCl(aq) \rightarrow AgCl(s) + HNO_3(aq)$
    D. $2Al(s) + 3Cl_2(g) \rightarrow 2AlCl_3(s)$
35. Which of the following substance is not used as oxidizing agent in lab./industry at large?
    A. Cl_2 B. Br_2 C. F_2 D. Cu

36. If the solution of $Pb(NO_3)_2$ is combined with an equimolar solution of NaI, what is the result?
    A. A white precipitate of PbI_2 (s) C. A yellow precipitate of PbI_2(s)
    B. A yellow precipitate of $NaNO_3$ (s) D. A white precipitate of $NaNO_3$ (s)
37. How many grams of zinc is required to form 10.00g of $ZnCl_2$ according to the reaction equation i.e. Zn (s) + HCl(l) → $ZnCl_2$(s) + H_2(g) [Use M.wt. Zn = 65 g/mol, Cl = 35.5 g/mol & H = 1g/mol]
    A. 0.478g B. 4.78g C. 0.209g D. 9.47g
38. When two substances **A** and **B** are brought together a substance **'C'** with the evolution of heat was formed. The properties of **C** are entirely different from those of **A** and **B**. Thus, substance **'C'** would be:
    A. A compound B. An element C. A mixture D. There is no such combination
39. What is the maximum amount of nitrogen dioxide that can be produced by mixing 4.2 g of NO(g) and 3.2 g of O_2(g)?
    A. 4.60 g B. 2.30 g C. 3.22 g D. 6.44 g
40. When zinc react with sulpharic acid the hydrogen gas is evolved. which of the following is true in this redox reaction? $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$
    A. Zn is a oxidizing agent, H_2SO_4 is the reducing agent
    B. The reaction is disproportion types of reaction
    C. Zn is a reducing agent, H_2SO_4 is oxidizing agent.
    D. H_2SO_4 is oxidizing agent and $ZnSO_4$ Reducing agent.
41. The molar volume of gas at STP would be achieved by:
    A. Dividing the products of **1.00** mole of gas, **R** & temp. (**25^{o}C**) to that of **1.00** atmosphere pressure
    B. Dividing the products of **1.00** mole of gas, R & temp. (**0 ^{o}C**) to that of **1.00** atmosphere pressure
    C. Dividing the products of **1.00** mole of gas, R & temp. (1**25^{o}C**) to that of **1.00** pressure **1kPa**
    D. Dividing the products of **1.00 mole** of gas, **R** & temp. (**50 ^{o}C**) to that of **1.00** pressure **1kPa**
41. Which species in the given reaction below act as reductant?
    $ZnO(s) + CO(g) \longrightarrow Zn(s) + CO_2(g)$
    A. Carbon dioxide B. Carbon-monoxide C. Zinc (II) oxide D. Zinc
42. What is the oxidation number of chromium in **$Cr_2O_7^{2-}$** & in **H_2CrO_4)** respectively?
    A. +7 & +5 B. +5 & +7 C. +6 & +6 D. +7 & -6
43. Which of the following instrument is used to measure pressure of gas?
    A. Thermometer B. Barometer C. Cubic centimeter D. Manometer
44. Among the following liquid one is non-volatile liquid. Which one is it?
    A. CH_3CH_2OH B. C_6H_6 C. H_2SO_4 D. $(CH_3CH_2)_2O$
45. Which of the following factor does not affect the rate of evaporation of liquid?
    A. Surface area of liquid B. Temperature C. Intermolecular forces D. Altitude

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II. ANSWER THE FOLLOWING QUESTIONS ACCORDINGLY [Show all necessary steps where needed]

46. Explain the difference between exothermic & endothermic reaction.
47. Why do you think a balanced chemical equation is needed in solving stochiometric calculations?
48. What mass of CH_4 formed when 8.3 moles of CO react with hydrogen according to the ff. equation:

$$2CO + 2H_2 \longrightarrow CH_4 + CO_2$$

49. What volume of oxygen reacts with carbon monoxide to produce 0.5mole of carbon dioxide at STP?
50. If 46.0g of CH_4 reacts with 32.0g of O_2, according to the following reactions.

$$CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$$ [[M.wt (g/mol) : C = 12 , H= 1, O = 16]

    a. Which substance is the limiting reactant?
    b. How many grams of it remain unreacted?
    c. How many grams of CO_2 would be produced?

51. If 5.5 moles of calcium are reacted with 5.5 moles of oxygen then:
    a. Which substance is the limiting reactant?
    b. How many moles of CaO are formed?
52. How many grams of NaCl are produced when 80.0 grams of O_2 are produced?

$2NaClO_3 \longrightarrow 2NaCl + 3O_2$? [M.wt(g/mol) : Na = 23 , Cl = 35.5 O = 16]

53. How many moles of N_2 are produced by the decomposition of 1.25 mol of sodium azide in the reaction

$2NaN_3(s) \rightarrow 2Na(s) + 3N_2(g)$?[[M.wt (g/mol) : N = 14 , Na = 23]

54. How many grams of NH_3 can be produced from the reaction of 28 g of N_2 and 25 g of H_2?