



## CHEMISTRY

### BOOKS - VGS BRILLIANT CHEMISTRY (TELUGU ENGLISH)

#### CHEMICAL EQUATIONS

##### Exercise

1. What changes do you notice generally?

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2. "Coal is burnt", "crackers are burnt" ..... Changes

Are they physical (or) chemical changes?

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3. Are they (coal, crackers) temporary changes or permanent changes?

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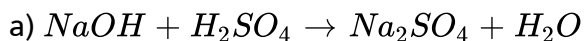
4. What can be interpreting from a chemical equation ?

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5. Why should we balance a chemical equation?

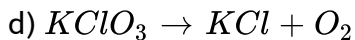
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6. Balance the following chemical equations.



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7. Balance the following chemical equations.



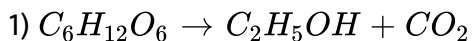
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8. Balance the following chemical equations.



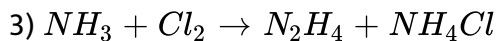
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9. Balance the following chemical equations including the physical states.



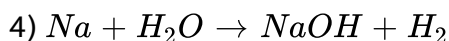
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10. Balance the following chemical equations including the physical states.



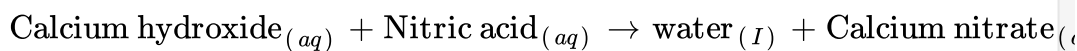
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11. Balance the following chemical equations including the physical states.



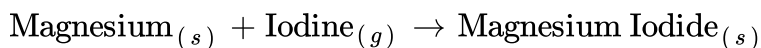
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12. Write the balanced chemical equations for the following and identify the type of reaction in each case.



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13. Write the balanced chemical equations for the following and identify the type of reaction in each case.



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14. Balance the chemical equation by including the physical states of the substances for the following reactions.

b) Sodium hydroxide reacts with hydrochloric acid to produce sodium chloride and water.

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15. Balance the chemical equation by including the physical states of the substances for the following reactions.

a) Barium chloride and sodium sulphate aqueous solutions react to give insoluble barium sulphate and aqueous solution of sodium chloride.

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16. 2 moles of Zinc reacts with a cupric chloride solution containing  $6.023 \times 10^{22}$  formula units of  $CuCl_2$ . Calculate the moles of copper

obtained.  $Zn_{(s)} + CuCl_{2(aq)} \rightarrow ZnCl_{2(aq)} + Cu_{(s)}$

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17. 1 Mole of propane ( $C_3H_8$ ) on combustion at STP gives 'A' kilo joules of heat energy. Calculate the heat liberated when 2.4 ltrs of propane on combustion at STP.

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18. Calculate the mass and volume of oxygen required at STP to convert 2.4 kg of graphite into carbon dioxide.

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19. How do you test the nature of the solution formed by dissolving  $CaO$  in water? what is the nature of the solution?

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20. Explain the reaction between sodium sulphate and Barium chloride.

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21. Explain the reaction of Zinc with HCl and write a balanced equation.

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22. You have brushed the wall with an aqueous suspension of  $Ca(OH)_2$ . After two days the wall turned to white colour. Write the balanced chemical reactions for the above changes using the appropriate symbols and formulae.

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23. How do we know a chemical reaction has taken place?



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24. Count the number of atoms of each elements on left and right of the arrow in the equation  $CaO + H_2O \rightarrow Ca(OH)_2$ .



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25.  $Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 + NaCl$ . Do the atoms of each element on left side equal to the atoms of the element on the right side of the equation?



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26.  $2C_3H_8 + 10O_2 \rightarrow 6CO_2 + 8H_2O$

Is it a balanced equation as per rules? How do you say?



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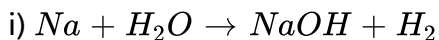
27.  $C_3H_8 + O_2 \rightarrow CO_2 + H_2O$  రసాయన సమీకరణాలు తుల్య చేయండి

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28. If you keep an iron piece in solid state  $CuSO_4$  crystals, does it get any reaction? Guess the reason.

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29. Balance the following chemical equation.



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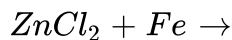
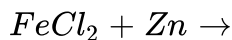
30. Balance the chemical equation  $Fe_2O_3 + Al \rightarrow Fe + Al_2O_3$ . Write the steps of balancing.

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31. On adding dilute hydrochloric acid to copper oxide powder, the solution formed is blue green. Write the new compound formed.

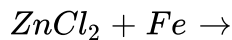
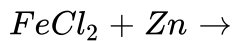
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32. Write the products of given reactions, if any. Give reason.



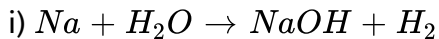
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33. Write the products of given reactions, if any. Give reason.



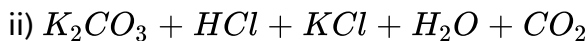
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34. Balance the following chemical equation.



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35. Balance the following chemical equation.



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36. Observe the following balance chemical equations and answer the given question:  $C_3H_{8(s)} + 5O_{2(g)} \rightarrow 3CO_{2(g)} + 4H_2O_{(g)}$  How many molecules of oxygen are involved in this chemical reaction?

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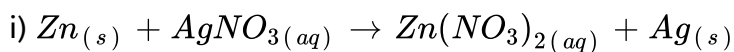
37. Observe the following balance chemical equations and answer the given question:  $C_3H_8(g) + 5O_2(g) \rightarrow 3CO_2(g) + 4H_2O(g)$  How many moles of propane are required to get 20 moles of water?

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38. Why should we balance a chemical equation? Take any one chemical equation and explain the procedure of balancing it.

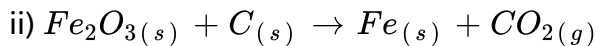
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39. Balance the following chemical equations.



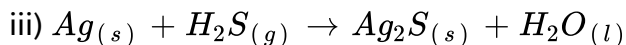
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40. Balance the following chemical equations.



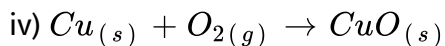
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41. Balance the following chemical equations.



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42. Balance the following chemical equations.



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43. Write the equation for the reaction of zinc with hydrochloric acid and balance the equation. Find, out the number of molecules of hydrogen gas

produced in this reaction, when 1 mole of HCl completely reacts at S.T.P.

[Gram molar volume is 22.4 liters at S.T.P., Avogadro's number is  $6.023 \times 10^{23}$ ]

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44. How many grams of  $O_2$  is required for combustion of 480 grams of m Mg? Find the mass of 'MgO' formed in this reaction.

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45. What are the reactants and products in a chemical reaction?

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46. What is meant by balanced equation ?

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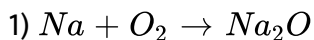
47. What do you mean by skeleton equation? Give one example.

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48. Why does white wash give a shiny finish to the walls?

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49. Balance the following equations.



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50. Balance the following equations:  $H_2O_2 \rightarrow H_2O + O_2$

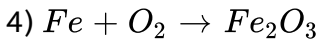
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51. Balance the following equations.



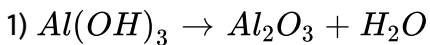
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52. Balance the following equations.



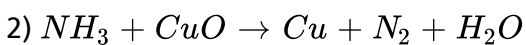
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53. Balance the following equations.



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54. Balance the following equations.

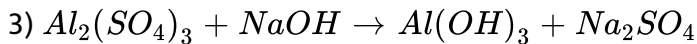






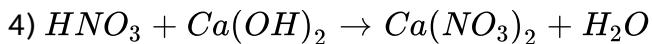
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55. Balance the following equations.



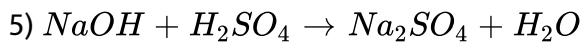
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56. Balance the following equations.



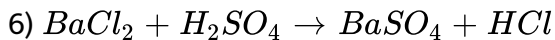
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57. Balance the following equations.



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58. Balance the following equations.



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59. Balance the following chemical equation.  $\text{C}_2\text{H}_6 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$

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60. What do you mean by precipitation reaction ?

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61. Why does respiration considered as an exothermic reaction ? Explain.

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62. How do you write a chemical equation?

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63. What are the important characteristics of chemical reactions?

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64. Write some chemical equation occurring in our daily life.

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65. How do you express the physical state of substances in the chemical equation ?

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66.  $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)} + Q$  is .....

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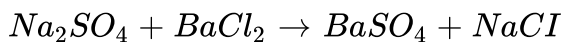
67.  $N_{2(g)} + O_{2(g)} \rightarrow 2NO_{2(g)} - Q$  is .....

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68.  $2Cu + O_2 \rightarrow 2CuO$  what information do you get from this equation?

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69. Name the reactants and products in the following chemical equations.



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70. Balance the following chemical equation and follow the steps involved in balancing a chemical equation.  $Cu_2S + O_2 \rightarrow Cu_2O + SO_2$

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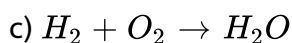
71. If 40 gm of methane is burnt, then how much amount of  $CO_2$  is released ?

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72. What does one mean by exothermic and endothermic reactions? Give examples.

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73. Balance the following chemical equations.

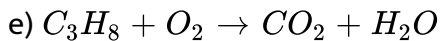


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74. Balance the following chemical equations.



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75. Balance the chemical equation by including the physical states of the substances for the following reactions.

c) Zinc pieces react with dilute hydrochloric acid to liberate hydrogen gas and forms zinc chloride.



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76. Potassium nitrate and sodium nitrate reacts separately with copper sulphate solution. Write balanced chemical equations for the above reactions.



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77. Observe the following equation which shows the action of heat on Calcium Nitrate :  $2Ca(NO_3)_2 \rightarrow 2CaO + 4NO_2 + O_2$  How many moles of  $NO_2$  are formed when 2 moles of  $Ca(NO_3)_2$  is decomposed?

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78. Observe the following equation which shows the action of heat on Calcium Nitrate :  $2Ca(NO_3)_2 \rightarrow 2CaO + 4NO_2 + O_2$  What is the volume of  $NO_2$  produced when 164 gm of  $Ca(NO_3)_2$  is heated at constant temperature and pressure ?

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79. Observe the following equation which shows the action of heat on Calcium Nitrate :  $2Ca(NO_3)_2 \rightarrow 2CaO + 4NO_2 + O_2$  Calculate the mass of Calcium Oxide formed when 82 gm of  $Ca(NO_3)_2$  is heated.

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80. Observe the following equation which shows the action of heat on Calcium Nitrate :  $2Ca(NO_3)_2 \rightarrow 2CaO + 4NO_2 + O_2$  What is the quantity of  $Ca(NO_3)_2$ , is required to produce 5 moles of gaseous products?

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81. Write the steps involved in the balancing a chemical reaction. Give an examples balancing the chemical equation.

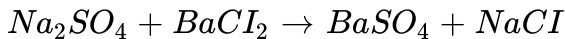
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82. How to make a chemical equation more informative?

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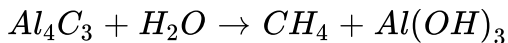


83. Balance the following chemical equations:



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84. balance the following chemical equations:



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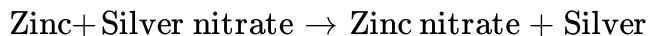
85. balance the chemical equations:  $\text{Pb}(\text{NO}_3)_2 \rightarrow \text{PbO} + \text{NO}_2 + \text{O}_2$

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86. Balance the chemical equation  $\text{Fe}_2\text{O}_3 + \text{Al} \rightarrow \text{Fe} + \text{Al}_2\text{O}_3$ . Write the steps of balancing.

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**87.** Write the balanced chemical equations for the following reactions.

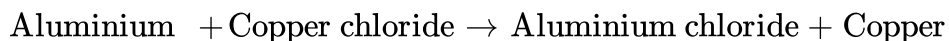


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**88.** Which gas is produced when zinc granules react with Hydrochloric acid ?

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**89.** Write the balanced chemical equations for the following reactions.



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90. Write the balanced chemical equations for the following reactions.

Hydrogen + Chlorine  $\rightarrow$  Hydrogen chloride

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91. Write the balanced chemical equations for the following reactions.

Ammonium nitrate  $\rightarrow$  Nitrous oxide + Water

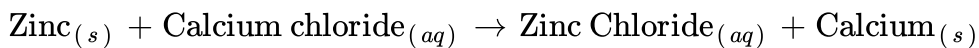
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92. Write the balanced chemical equations for the following and identify the type of reaction in each case.

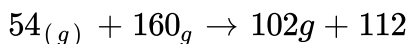
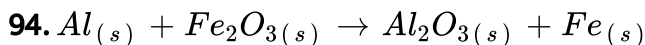
Magnesium<sub>(s)</sub> + Hydrochloric acid<sub>(aq)</sub>  $\rightarrow$  Magnesium chloride<sub>(aq)</sub> + Hydrogen<sub>(g)</sub>

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93. Write the balanced chemical equations for the following and identify the type of reaction in each case.



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was given, Then, the amount of aluminium required to get 1120 grams of iron is

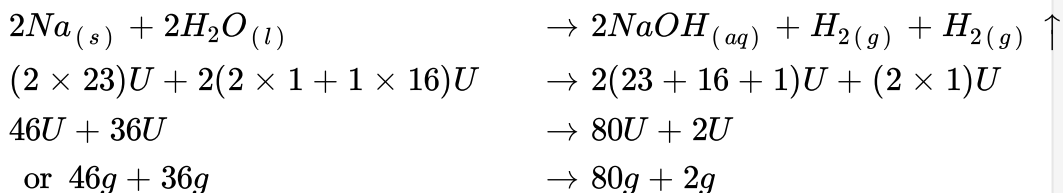
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95. Calculate the volume, mass and number of molecules of hydrogen liberated when 230 g of sodium reacts with excess of water at STP (atomic masses of Na = 23U, O = 16 U and H = 1U).

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96. Calculate the volume, mass and number of molecules of hydrogen liberated when 230 g of sodium reacts with excess of water at STP.  
(atomic masses of Na = 23U, O = 16U, and H = 1U)

the balanced equation for the above reaction is



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97. Explain the reaction between sodium sulphate and Barium chloride.

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98. What are the precautions to be observed while mixing Zn and HCl?

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99. What are your observations after adding Zinc granules to HCl?

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100. Which gas is produced when zinc granules react with Hydrochloric acid ?

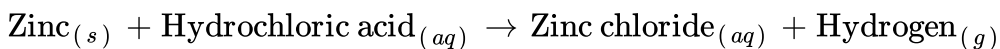
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101. How do you test the gas evolved while Zn granules are added to HCl ?

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102. Write the balanced chemical reaction for the following and identify the type of reaction in each case.

B)





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**103.** How do you test the nature of the solution formed by dissolving  $CaO$  in water? what is the nature of the solution?



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**104.** How do you test the nature of the solution formed by dissolving  $CaO$  in water? what is the nature of the solution?



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**105.** Water is added to quick lime in a beaker and you touch the bottom of the beaker what do you notice ? What is the reason ?



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**106.** Write the reactants and products in the following reaction. Calcium oxide + Water  $\rightarrow$  Calcium hydroxide.

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**107.** Calculate the volume and the number of molecules of  $CO_2$  liberated at STP if 50 grams of  $CaCO_3$  is treated with dilute hydrochloric acid which contains 7.3 grams of dissolved HCl gas.

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**108.** What is a limiting reagent?

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**109.** How much minimum volume of CO at STP is needed to react completely with 0.112 L of  $O_2$  at 1.5 atm. Pressure and  $127^\circ C$  to give  $CO_2$ .



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110. How much of lime ( $\text{CaO}$ ) can be obtained by the calcinations of 300 g of lime stone?

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111. What volume of  $\text{H}_2$  at STP is required to reduce 0.795 g of  $\text{CuO}$  to give  $\text{Cu}$  and  $\text{H}_2\text{O}$ .

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112. Calculate the volume of  $\text{O}_2$  at STP required to completely burn 100 ml. of acetylene.

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113. If the gas liberated in an experiment allows the burning splinter to continue burning more brightly in its presence, the gas is .....

- A. oxygen
- B. nitrogen
- C. hydrogen
- D. carbon dioxide

**Answer:**



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114. Number of moles of Oxygen needed to produce 4 moles of water on reacting with 4 moles of Hydrogen gas is .....

- A. 1 mole
- B. 2 moles
- C. 3 moles

D. 4 moles

**Answer:**



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**115.** The reaction that takes place when quicklime is added to water is .....

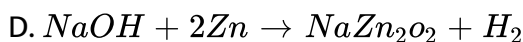
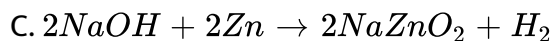
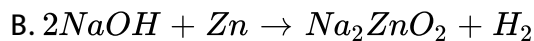
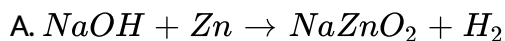
- A. displacement reaction
- B. gas liberating reaction
- C. heat liberating reaction
- D. combustion reaction

**Answer:**



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116. The balanced chemical equation, among the following, is .....



**Answer:**



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117. Solutions of Copper sulphate, Iron sulphate and Sodium sulphate are marked as X, Y and Z respectively. Few pieces of Aluminium are added to each solution. In which solutions, change will be observed?

A. X and Y

B. Y and Z

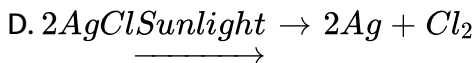
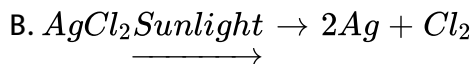
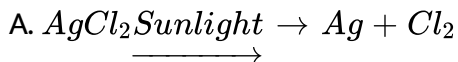
C. X and Z

D. X. Y and Z

Answer:

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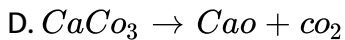
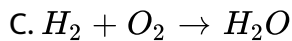
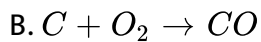
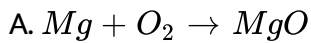
118. The balanced chemical equation of  $AgCl \xrightarrow{\text{Sunlight}} Ag + Cl_2$  is \_\_\_



Answer:

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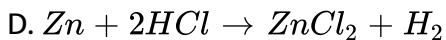
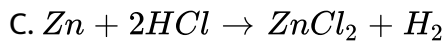
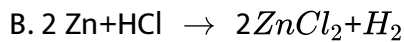
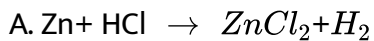
119. Which of the following is a balanced equation?



**Answer:**

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**120.** Which of the following is correct



**Answer:**

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121. Downward arrow in chemical equation indicates-

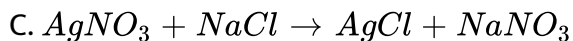
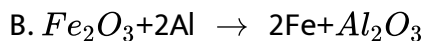
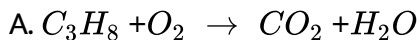
- A. Direction
- B. Gas
- C. Precipitate
- D. No reaction

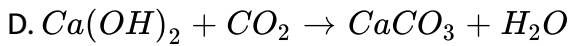
Answer:



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122. which of the following is a skeleton reaction?





**Answer:**



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**123.** The chemical reaction in which energy is absorbed to form a new compound is called. ....

- A. Exothermic reaction
- B. Endothermic reaction
- C. Thermal reaction
- D. Photochemical reaction

**Answer:**



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**124.** The substances that are present on left side of a chemical equation are called .....

- A. Reactants
- B. Products
- C. Precipitates
- D. Gases

**Answer:**



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**125.** Chemical equation is balanced according to the law of

- A. Constant proportions
- B. Conservation of mass
- C. Law of equality
- D. Law of balance

**Answer:**



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**126.**  $C + O_2 \rightarrow CO_2 + Q$ . This is \_\_\_ reaction.

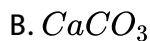
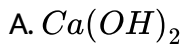
- A. Endothermic
- B. Chemical
- C. Exothermic
- D. Photochemical

**Answer:**



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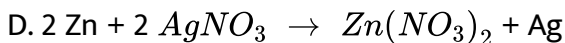
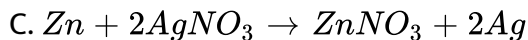
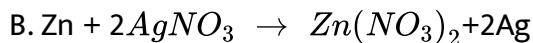
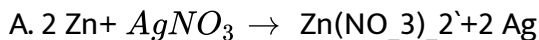
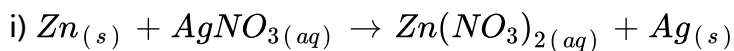
**127.**  $Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$ . In this reaction shiny finish to walls is due to \_\_\_\_\_



**Answer:**

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**128.** Balance the following chemical equations.



**Answer:**

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**129.** If some amount of energy is released in a chemical reaction, then it is called \_\_\_ reaction.

- A. Exothermic
- B. Endothermic
- C. Oxidation
- D. Reduction

**Answer:**

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**130.** Crackers burnt is a

- A. Physical change
- B. Chemical change

C. Both A & B

D. None

**Answer:**

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**131.** Skeleton equation means

A. A balanced chemical equation

B. An unbalanced chemical equation

C. Chemical equation without reactants

D. Chemical equation without products

**Answer:**

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**132.** How do you express the physical state of substances in the chemical equation ?

A. (l),(g) and (s)

B. (S),(g) and (l)

C. (S),(l) and (g)

D. (g),(l), and (s)

**Answer:**



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**133.** Aqueous means

A. Substance in alcohol

B. Substance in water

C. Substance in mercury

D. Substance in KOH

**Answer:**



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**134.** Aqueous indicates in chemical equation as

A. (q)

B. Q

C. (aq)

D. (W)

**Answer:**



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**135.** The reaction in which heat release

A. Exothermic reaction

B. Endothermic reaction

C. Both A & B

D. We can't say

**Answer:**



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**136.** 1 Gram molar volume of gas occupies

A. 2.24 litres

B. 22.4 litres

C. 4.22 litres

D. 42 .2 litres

**Answer:**



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137. STP conditions

A. 273K,1bar

B.  $30^{\circ}C$ , 1bar

C. 273 K, 76 bar

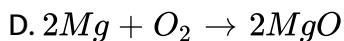
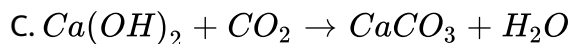
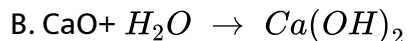
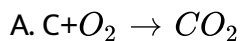
D.  $30^{\circ}C$ , 76bar

Answer:



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138. Not an exothermic reaction



**Answer:**

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**139.** The number of molecules present in 1g of hydrogen

A.  $6 \times 10^{23}$

B.  $3 \times 10^{23}$

C.  $1 \times 10^{23}$

D.  $2 \times 10^{23}$

**Answer:**

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**140.**  $xH_2 + yO_2 \rightarrow zH_2O$ . The values of x, y, z are

A.  $X=1, y=1, z=1$

B.  $X=2, y=1, z=2$

C.  $X=2, y=2, z=2$

D.  $X=2, y=2, z=1$

**Answer:**



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**141.** Which one is necessary to test for a hydrogen gas ?

A.  $Ca(OH)_2$

B. Battery

C. Burning stick

D. Litmus paper

**Answer:**



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**142.** A student added dilute HCL to a test tube containing Zn granules and made following observations. 1)The Zn surface became dull and black. 2 ) A gas evolved which burnt with a pop sound 3) the solution remained colorless

A. 1,2

B. 2,3

C. 1,3

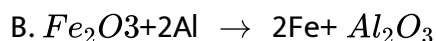
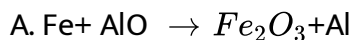
D. All the above

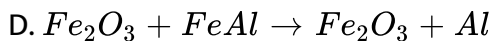
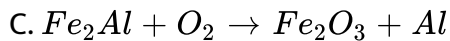
**Answer:**



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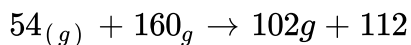
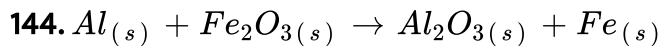
**143.** The chemical reaction is





**Answer:**

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was given, Then, the amount of aluminium required to get 1120 grams of iron is

A. 540 gr

B. 540 kg

C. 112 gr

D. 1120 gr

**Answer:**

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145. 10 g of hydrogen contain ..... molecules. If 2g of hydrogen contain  $6.02 \times 10^{23}$  molecules.

A.  $3.01 \times 10^{12}$

B.  $3.01 \times 10^{24}$

C.  $6.02 \times 10^{24}$

D.  $6.02 \times 10^{23}$

**Answer:**



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