



CHEMISTRY

BOOKS - S CHAND CHEMISTRY (HINGLISH)

CHEMICAL REACTIONS AND EQUATIONS

Solved Examples

1. Write a balanced equation for the following reaction: Methane burns in oxygen to form carbon dioxide and water.



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2. Convey the following information in the form of a balanced chemical equation :

On adding an aqueous solution of sodium hydroxide to an aqueous

solution of copper sulphate, copper hydroxide is precipitated and sodium sulphate remains in solution.

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3. Write a balanced chemical equation with state symbols for the following reaction: Heated iron metal reacts with steam to form iron (II, III) oxide, (Fe_3O_4) and hydrogen.

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4. Write the balanced equation for the following chemical reaction:

Hydrogen + Chlorine \rightarrow Hydrogen chloride

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5. Translate the following statement into chemical equation and then balance the equation:

Hydrogen gas combines with nitrogen to form ammonia.

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6. Write the balanced chemical equation for the following reaction :

Sodium metal reacts with water to give sodium hydroxide and hydrogen.

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7. Write a balanced chemical equation for the following chemical reaction

:

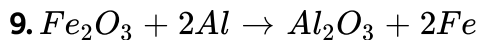
Magnesium burns in oxygen to form magnesium oxide.

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8. What happens when dilute hydrochloric acid is added to iron filings?

Tick the correct answer.

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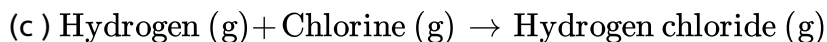
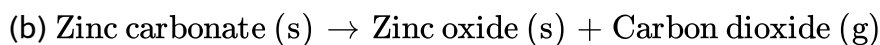


The above reaction is an example of a

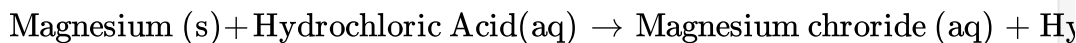
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10. Write the balanced chemical equations for the following and identify the type of reaction in each case :

(a)

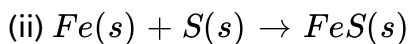
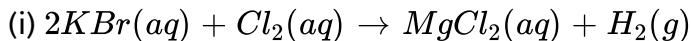


(d)



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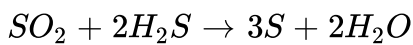
11. Below are given two chemical reactions :



Which is combination reaction and which is displacement reaction ?

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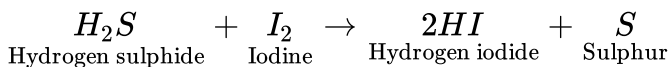
12. In the reaction



the substance oxidised is

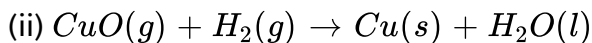
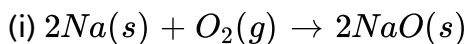
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13. Select the oxidising agent and the reducing agent from the following reaction :



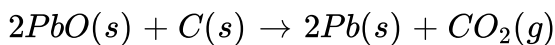
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14. Identify the substances that are oxidised and the substances that are reduced in the following reactions.



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15. Which of the statements about the reaction below are incorrect?



- (a) Lead is getting reduced.
- (b) Carbon dioxide is getting oxidised.
- (c) Carbon is getting oxidised.
- (d) Lead oxide is getting reduced.

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16. A shiny brown coloured element $\hat{\text{X}}$ on heating in air becomes black in colour. Name the element $\hat{\text{X}}$ and the black coloured

compound formed

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Exercise

1. Why is respiration considered an exothermic reaction? Explain.

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2. What is a balanced chemical equation? Why should chemical equations be balanced?

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3. What happens chemically when quicklime is added to water filled in a bucket?

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4. Why should a magnesium ribbon be cleaned before burning in air?

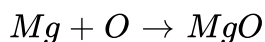
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5. State whether the following statement is true or false :

A chemical equation can be balanced easily by altering the formula of a reactant or product.

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6. What is wrong with the following chemical equation ?



Correct and balance it.

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7. What does the symbol (aq) represent in a chemical equation?

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8. Why is photosynthesis considered an endothermic reaction ?

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9. Translate the following statement into chemical equations and then balance the equations

(a) Hydrogen sulphide gas burns in air to give water and sulphur dioxide.

(b) Phosphorus burns in oxygen to give phosphorus pentoxide.

(c) Carbon disulphide burns in air to give carbon dioxide and sulphur dioxide.

(d) Aluminium metal replaces iron from ferric oxide, Fe_2O_3 giving aluminium oxide and iron.

(e) Barium chloride reacts with zinc sulphate to give zinc chloride and barium sulphate



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10. Write the balanced chemical equations for the following reactions

(a) Calcium hydroxide + Carbon dioxide \rightarrow Calcium carbonate + Water

(b) Aluminium + Copper chloride \rightarrow Aluminium chloride + Copper



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11. Complete and balance the following equations :

(a) $NaOH + \dots\dots\dots \rightarrow Na_2SO_4 + H_2O$

(b) $Ca(OH)_2 + \dots\dots\dots \rightarrow CaCO_3 + H_2O$



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12. Correct and balance the following equations:

(i) $Ca + H_2O \rightarrow CaOH + H$

(ii) $N_2 + H_2 \rightarrow NH_3$



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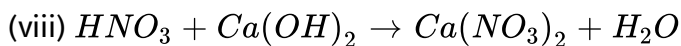
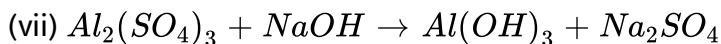
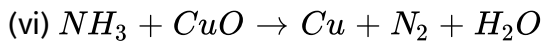
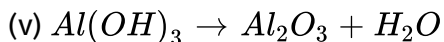
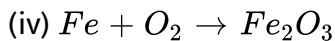
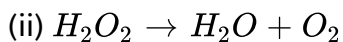
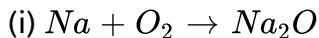
13. Write complete balanced equations for the following reactions:

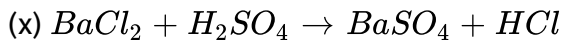
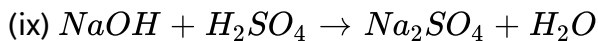
(a) Calcium (solid) + Water (liquid) \rightarrow Calcium hydroxide (solution) + Hydrogen (gas)

(b) Sulphur dioxide (gas) + Oxygen (gas) \rightarrow Sulphur trioxide (gas)

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14. Balance the following equations:





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15. Fill in the following blanks with suitable words :

(a) Chemical equations are balanced to satisfy the law of

(b) A solution made in water is known as an solution and indicated by the symbol.....

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16. (a) Give one example of a chemical reaction.

(b) State two characteristic of the chemical reaction which takes place when dilute sulphuric acid is poured over zinc granules.

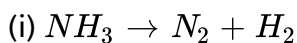
(c) Given two characteristics of the chemical reaction which occurs on adding potassium iodide solution to lead nitrate solution.

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17. (a) What is a chemical equation ?Example with the help of an example.

(b) Giving examples, state the difference between balanced and unbalanced chemical equations.

(c) Balance the following chemical equations :



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18. When hydrogen is passed over copper oxide, copper and steam are formed. Write a balanced equation for this reaction and state which of the chemicals are :

(i) elements (ii) compounds (iii) reactants

(iv) products (v) metals (vi) non-metals



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19. (a) What are the various ways in which a chemical equation can be made more informative ? Give examples to illustrate your answer.

(b) Write balanced chemical equation from the following information :

An aqueous calcium hydroxide solution (lime water) reacts with carbon dioxide gas to produce a solid calcium carbonate precipitate and water.

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20. (a) What is a balanced chemical equation ? Why should chemical equations be balanced ?

(b) Aluminium burns in chlorine to form aluminium chloride ($AlCl_3$).

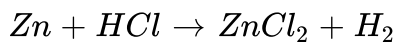
Write a balanced chemical equation for this reaction.

(c) Potassium metal reacts with water to give potassium hydroxide and hydrogen gas. Write a balanced chemical equation for this reaction

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21. (a) Explain with example, how the physical states of the reactants and products can be shown in a chemical equation

(b) Balance the following equation and add state symbols:



(c) Convey the following information in the form of a balanced chemical equation :

"An aqueous solution of ferrous sulphate reacts with an aqueous solution of sodium hydroxide to form a precipitate of ferrous hydroxide and sodium sulphate remains in solution"



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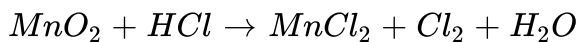
22. Write any two observations in an activity which may suggest that a chemical reaction has taken place. Give an example in support of your answer.



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23. (a) Aluminium hydroxide reacts with sulphuric acid to form aluminium sulphate and water. Write a balanced equation for this reaction.

(b) Balance the following chemical equation :



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24. Write the balanced equations for the following reactions, and add the state symbols :

(a) Magnesium carbonate reacts with hydrochloric acid to produce magnesium chloride, carbon dioxide and water.

(b) Sodium hydroxide reacts with sulphuric acid to produce sodium sulphate and water.

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25. Carbon monoxide reacts with hydrogen under certain conditions to form methanol (CH_3OH). Write a balanced chemical equation for this

reaction indicating the physical states of reactants and product as well as the conditions under which this reaction takes place

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26. (a) Potassium chlorate ($KClO_3$) on heating forms potassium chloride and oxygen. Write a balanced equation for this reaction and indicate the evolution of gas.

(b) Rewrite the following information in the form of a balanced chemical equation

Magnesium burns in carbon dioxide to form magnesium oxide and carbon.

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27. (a) Substitute formulae for names and balance the following equation:
Calcium carbonate reacts with hydrochloric acid to produce calcium chloride, water and carbon dioxide gas.

(b) Write balanced chemical equation with state symbols for the following reaction :

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

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28. Ammonia reacts with oxygen to form nitrogen and water. Write a balanced chemical equation for this reaction. Add the state symbols for all the reactants and products.

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29. Write a balanced chemical equation for the process of photosynthesis given the physical states of all substances involved and the conditions of the reaction.

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30. Write the balanced equation for the following chemical reactions.

(i) Hydrogen + Chlorine \rightarrow Hydrogen chloride

(ii) Barium chloride + Aluminium sulphate \rightarrow Barium sulphate +
Aluminium chloride

(iii) Sodium + Water \rightarrow Sodium hydroxide + Hydrogen



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31. When potassium nitrate is heated. It decomposes into potassium nitrite and oxygen. Write a balanced equation for this reaction and add the state symbols of the reactants and products.



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32. (a) What is meant by a chemical reaction ? Explain with the help of an example

(b) Given one example each of a chemical reaction characterised by:

(i) evolution of a gas

- (ii) change in colour
- (iii) formation of a precipitate
- (iv) change in temperature
- (v) change in state.

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33. (a) State the various characteristics of chemical reactions.

(b) state one characteristic each for the chemical reaction which takes place when

- (i) dilute hydrochloric acid is added to sodium carbonate
- (ii) lemon juice is added gradually to potassium permanganate solution
- (iii) dilute sulphuric acid is added to barium chloride solution
- (iv) quicklime is treated with water
- (v) wax is burned in the form of a candle

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34. (a) What do you understand by exothermic and endothermic reactions ?

(b) Give one example of an exothermic reaction and one of an endothermic reaction.

(c) Which of the following are endothermic reactions and which are exothermic reactions ?

- | | |
|--|---------------------|
| (i) Burning of natural gas | (ii) Photosynthesis |
| (iii) Electrolysis of water | (iv) Respiration |
| (v) Decomposition of calcium carbonate | |



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35. One of the following does not happen during a chemical reaction. This is :

- A. Breaking of old chemical bonds and formation of new chemical bonds
- B. Formation of new substances with entirely different properties

C. Atoms of one element change into those of another element to form new products.

D. A rearrangement of atoms takes place to form new products.

Answer: C

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36. Which of the following does not involve a chemical reaction?

A. digestion of food in our body

B. process of respiration

C. burning of candle wax when heated

D. melting of candle wax on heating

Answer: D

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37. You are given the solution of lead nitrate. In order to obtain a yellow precipitate you should mix with is solution of

A. potassium chloride

B. potassium nitride

C. potassium sulphide

D. potassium iodide

Answer: D



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38. An acid which can decolourise purple coloured potassium permanganate solution is :

A. sulphuric acid

B. citric acid

C. carbonic acid

D. hydrochloric acid

Answer: B

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39. The chemical reaction between two substances is characterised by a change in colour from orange to green. These two substances are most likely to be:

- A. potassium dichromate solution and sulphur dioxide
- B. potassium permanganate solution and sulphur dioxide
- C. potassium permanganate solution and lemon dioxide
- D. potassium dichromate solution and carbon dioxide.

Answer: A

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40. The chemical reaction between quicklime and water is characterised by :

- A. evolution of hydrogen gas
- B. formation of slaked lime precipitate
- C. change in temperature of mixture
- D. change in colour of the product

Answer: C



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41. One of the following is an endothermic reaction. This is :

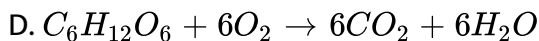
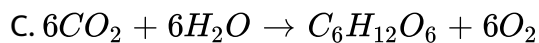
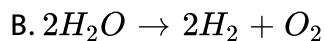
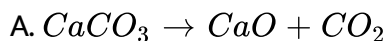
- A. combination of carbon and oxygen to form carbon monoxide
- B. combination of nitrogen and oxygen to form nitrogen monoxide
- C. combination of glucose and oxygen to form carbon dioxide and water

D. combination of zinc and hydrochloric acid to form zinc chloride and hydrogen

Answer: B

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42. Which of the following is not an endothermic reaction ?



Answer: D

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43. One of the following is an exothermic reaction. This is

- A. electrolysis of water
- B. conversion of limestone into quicklime
- C. process of respiration
- D. process of photosynthesis

Answer: C



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44. The chemical equations are balanced to satisfy one of the following laws in chemical reactions. This law is known as :

- A. law of conservation of momentum
- B. law of conservation of mass
- C. law of conservation of motion
- D. law of conservation of magnetism

Answer: B



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45. When the solution of substance X is added to a solution of potassium iodide, then a yellow solid separates out from the solution.

(a) What do you think substance X is likely to be

(b) Name the substance which the yellow solid consists of.

(c) Which characteristic of chemical reactions is illustrated by this example?

(d) Write a balanced chemical equation for the reaction which takes place.

Mention the physical states of all the reactants and products involved in the chemical equation.



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46. When water is added gradually to a white solid X, a hissing sound is heard and a lot of heat is produced forming a product Y. A suspension of Y

in water is applied to the walls of a house during white washing. A clear solution of Y is also used for testing carbon dioxide gas in the laboratory.

- (a) What could be solid X? Write its chemical formula.
- (b) What could be product Y? Write its chemical formula.
- (c) What is the common name of the solution of Y which is used for testing carbon dioxide gas?
- (d) Write chemical equation of the reaction which takes place on adding water to solid X.
- (e) Which characteristic of chemical reactions is illustrated by this example?



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47. When metal X is treated with a dilute acid Y, then a gas Z is evolved which burns readily by making a little explosion.

- (a) Name any two metals which can behave like metal X.
- (b) Name any two acids which can behave like acid Y.
- (c) Name the gas Z.
- (d) Is the gas Z lighter than or heavier than air?

(e) Is the reaction between metal X and dilute acid Y exothermic or endothermic ?

(f) By taking a specific example of metal X and dilute acid Y write a balanced chemical equation for the reaction which takes place. Also indicate physical states of all the reactants and products.

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48. A silver-white metal X taken in the form of ribbon, when ignited, burns in air with a dazzling white flame to form a white powder Y. When is added to powder Y, it dissolves partially to form another substance Z.

(a) What could metal X be ?

(b) What is powder Y ?

(c) With which substance metal X combines to form powder Y ?

(d) What is substance Z ? Name one domestic use of substance Z.

(e) Write a balanced chemical equation of the reaction which takes place when metal X burns in air to form powder Y.

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49. A metal X forms a salt XSO_4 . The salt XSO_4 forms a clear solution in water which reacts with sodium hydroxide solution to form a blue precipitate Y. Metal X is used in making electric wires and alloys like brass.

(a) What do you think metal X could be ?

(b) Write the name, formula and colour of salt XSO_4 .

(c) What is the blue precipitate Y ?

(d) Write a chemical equation of the reaction which takes place when salt XSO_4 reacts with sodium hydroxide solution. Give the state symbols of all the reactants and products which occur in the above equation.



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50. The metal M reacts vigorously with water to form a solution S and a gas G. The solution S turns red litmus to blue whereas gas G, which is lighter than air, burns with a pop sound. Metal M has a low melting point and it is used as a coolant in nuclear reactors.

(a) What is metal M ?

(b) What is solution S ? is it acidic or alkaline ?

(c) What is gas G ?

(d) Write a balanced chemical equation for the reaction which takes place when metal M reacts with water.

(e) Is this reaction exothermic or endothermic ?



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51. When a mixture of gases X and Y is compressed to 300 atm pressure and then passed over a catalyst consisting of a mixture of zinc oxide and chromium oxide (heated to a temperature of $300^{\circ}C$), then an organic compound Z having the molecular formula CH_4O is formed. X is a highly poisonous gas which is formed in appreciable amounts when a fuel burns in a limited supply of air, Y is a gas which can be made by the action of a dilute acid on an active metal, and Z is a liquid organic compound which can react with sodium metal to produce hydrogen gas.

(a) What are X, Y and Z?

(b) Write balanced chemical equation of the reaction which takes place when C and Y combine to form. Indicate the conditions under which the reaction occurs.



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52. The white solid compound A decomposes quite rapidly on heating in the presence of a black substance form a solid compound B and a gas C. When an aqueous solution of compound B is reacted with silver nitrate solution, then a white precipitate of silver chloride is obtained along with potassium nitrate solution. Gas C does not burn itself but helps burn other things.

- (a) What is compound A ?
- (b) What is compound B ?
- (c) What is gas C ?
- (d) What do you think is the black substance X? What is its function ?
- (e) What is the general name of substance like X ?



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53. Gas A, which is the major cause of global warming, combines with hydrogen oxide B in nature in the presence of an environmental factor C

and a green material D to form a six carbon organic compound E and a gas F. The gas F is necessary for breathing.

- (a) What is gas A ?
- (b) What is the common name of B ?
- (c) What do you think could be C ?
- (d) What is material D ? Where is it found ?

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54. What type of reaction is represented by the digestion of food in our body?

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55. Name the various types of chemical reactions.

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56. Why does the colour of copper sulphate solution change when an iron nail is dipped in it?

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57. Write the balanced chemical equation for the following reaction:

Zinc + Silver nitrate \rightarrow Zinc nitrate + silver

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58. Which term is used to indicate the development of unpleasant smell and taste in fat and oil containing foods due to aerial oxidation (when they are kept exposed for a considerable time) ?

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59. What is the general name of the chemicals which are added to fat and oil containing foods to prevent the development of rancidity?

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60. State an important use of decomposition reactions.

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61. What are anti-oxidants ? Why are they added to fat and oil containing foods?

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62. Explain why, food products containing fats and oils (like potato chips) are packaged in nitrogen.

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63. Give one example of a decomposition reaction which is carried out:

(a) with electricity

(b) by applying heat

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64. What type of chemical reaction is used to extract metals from their naturally occurring compounds like oxides or chlorides?

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65. Name two anti-oxidants which are usually added to fat and oil containing foods to prevent rancidity.

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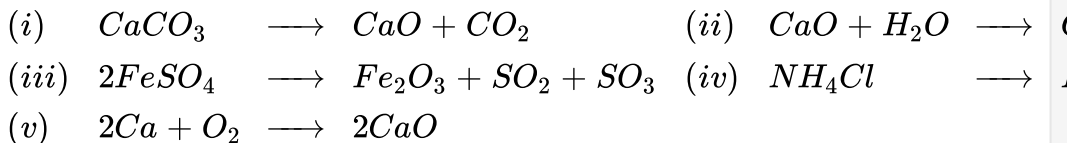
66. Write one equation each for decomposition reactions where energy is supplied in the form of heat, light or electricity.

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67. In the refining of silver, the recovery of silver from silver nitrate solution involved displacement by copper metal. Write down the reaction involved.

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68. What type of reactions are represented by the following equations ?



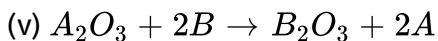
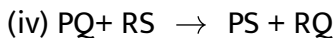
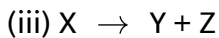
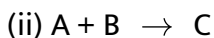
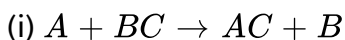
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69. What type of chemical reactions take place when:

- (a) a magnesium wire is burnt in air ?
- (b) lime-stone is heated?
- (c) silver bromide is exposed to sunlight?
- (d) electricity is passed through water?
- (e) ammonia and hydrogen chloride are mixed ?

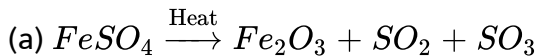
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70. What type of chemical reactions are represented by the following equations ?



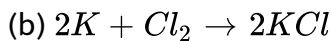
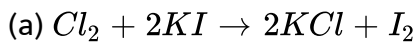
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71. Balance the following chemical equations



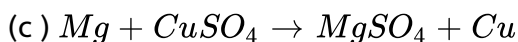
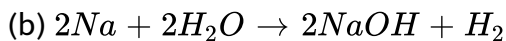
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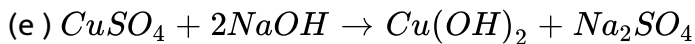
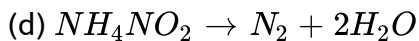
72. Which of the following is a combination and which is a displacement reaction?



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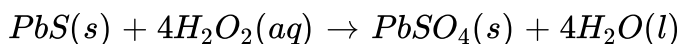
73. What type of reactions are represented by the following equations?





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74. In the following reaction between lead sulphide and hydrogen peroxide:

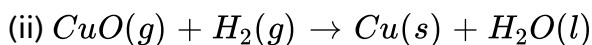
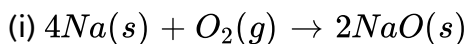


(a) Which substance is reduced ?

(b) Which substance is oxidised ?

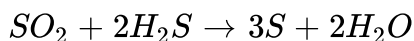
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75. Identify the substances that are oxidised and the substances that are reduced in the following reactions.



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76. In the reaction



the substance oxidised is

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77. Fill in the following blanks with suitable words:

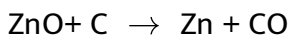
(a) The addition of oxygen to a substance is called Whereas removal of oxygen is called

(b) The addition of hydrogen to a substance is called Whereas removal of hydrogen is called.....

(c) Anti-oxidants are often added to fat containing foods to prevent..... due to oxidation.

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78. What is an oxidation reaction (i) the substance oxidised and (ii) the substance reduced:

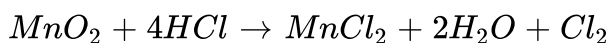


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79. (a) What is a redox reaction ? Explain with an example.

(b) When a magnesium ribbon burns in air with a dazzling flame and forms a white ash, is magnesium oxidised or reduced ? Why ?

(c) In the reaction represented by the equation:



(i) name the substance oxidised. (ii) name the oxidising agent.

(iii) name the substance reduced. (ii) name the reducing agent.

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80. (a) Define a combination reaction.

(b) Give one example of a combination reaction which is also endothermic.

(c) Give one example of a combination which is also endothermic.

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81. (a) Give an example of an oxidation reaction.

(b) Is oxidation an exothermic or an endothermic reaction?

(c) Explain, by giving an example, how oxidation and reduction proceed side by side.

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82. (a) What is the colour of ferrous sulphate crystals? How does this colour change after heating?

(b) Name the product formed on strongly heating ferrous sulphate crystals. What type of chemical reaction occurs in this change?

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83. What is a decomposition reaction? Give an example of a decomposition reaction. Describe an activity to illustrate such a reaction by heating.

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84. Zinc oxide reacts with carbon, on heating, to form zinc metal and carbon monoxide. Write a balanced chemical equation for this reaction. Name (i) oxidising agent, and (ii) reducing agent, in this reaction.

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85. Give one example of an oxidation-reduction reaction which is also:

(a) a combination reaction

(b) a displacement reaction

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86. (a) What is the difference between displacement and double displacement reactions ? Write equations for these reactions.

(b) What do you mean by a precipitation reaction ? Explain an example.

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87. (a) Example the following in terms of gain or loss of oxygen with one example each :

(b) When copper powder is heated strongly in air, it forms copper oxide. Write a balanced chemical equation for this reaction. Name (i) substance oxidised, and (ii) substance reduced.

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88. (a) Define the following in terms of gain or loss of hydrogen with one example each:

(i) oxidation (ii) reduction

(b) When a magnesium ribbon is heated, it burns in air to form

magnesium oxide. Write a balanced chemical equation for this reaction.

Name (i) substance oxidised, and (ii) substance reduced.

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89. What is meant by (a) displacement reaction, and (b) double displacement reaction? Example with the help of one example each.

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90. (a) Why are decomposition reactions called the opposite of combination reactions? Explain with equations of these reactions.

(b) Express the following facts in the form of a balanced chemical equation:

"When a strip of copper metal is placed in a solution of silver nitrate, metallic silver is precipitated and a solution containing copper nitrate is formed"

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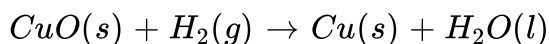
91. (a) What happens when a piece of iron metal is placed in copper sulphate solution? Name the type of reaction involved.

(b) Write a balanced chemical equation with state symbols for the following reaction:

Barium chloride solution reacts with sodium sulphate solution to give insoluble barium sulphate and a solution of sodium chloride.

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92. In the reaction represented by the following equation:



(a) name the substance oxidised (b) name the substance reduced

(c) name the oxidising agent (d) name the reducing agent

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93. What happens when silver nitrate solution is added to sodium chloride solution?

(a) Write the equation for the reaction which takes place.

(b) Name the type of reaction involved.

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94. What happens when silver chloride is exposed to sunlight? Write a chemical equation for this reaction. Also give one use of such a reaction.

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95. What happens when a zinc strip is dipped into a copper sulphate solution?

(a) Write the equation for the reaction that takes place.

(b) Name the type of reaction involved.

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96. (a) Explain the term "corrosion" with an example. Write a chemical equation to show the process of corrosion of iron.

(b) What special name is given to the corrosion of iron ?

(c) What type of chemical reaction is involved in the corrosion of iron ?

(d) Name any three objects (or structures) which are gradually damaged by the corrosion of iron and steel.

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97. (a) Explain the term "rancidity". What damage is caused by rancidity ?

(b) What type of chemical reaction is responsible for causing rancidity ?

(c) State and explain the various methods for preventing or retarding rancidity of food.

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98. (a) What happens when an aqueous solution of sodium sulphate reacts with an aqueous solution of barium chloride ?

(b) Write the balanced chemical equation for the reaction which takes place.

(c) State the physical conditions of reactants in which the reaction will not take place.

(d) Name the type of chemical reaction which occurs.

(e) Give one example of another reaction which is of the same type as the above reaction.



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99. The removal of oxygen from a substance is called :

A. oxidation

B. corrosion

C. reduction

D. rancidity

Answer: C



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100. In the context of redox reactions, the removal of hydrogen from a substance is known as:

- A. oxidation
- B. dehydration
- C. reduction
- D. dehydrogenation

Answer: A

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101. The chemical reaction involved in the corrosion of iron metal is that of:

- A. oxidation as well as combination
- B. reduction as well as combination

C. oxidation as well as displacement

D. reduction as well displacement

Answer: C



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102. Which term is used to indicate the development of unpleasant smell and taste in fat and oil containing foods due to aerial oxidation (when they are kept exposed for a considerable time) ?

A. acidity

B. radioactivity

C. rabidity

D. rancidity

Answer: D



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103. In order to prevent the spoilage of potato chips, they are packed in plastic bags in an atmosphere of :



Answer: C



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104. A white precipitate can be obtained by adding dilute sulphuric acid to :



C. $BaCl_2$ solution

D. Na_2SO_4 solution

Answer: C

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105. A white precipitate will be formed if we add common salt solution to

:

A. $Ba(NO_3)_2$ solution

B. KNO_3 solution

C. $AgNO_3$ solution

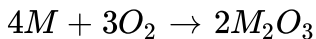
D. $Mg(NO_3)_2$ solution

Answer: C

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106. Consider the following equation of the chemical reaction of a metal

M :



This equation represents :

- A. combination reaction as well as reduction reaction
- B. decomposition reaction as well as oxidation reaction
- C. oxidation reaction as well as displacement reaction
- D. combination reaction as well as oxidation reaction

Answer: D



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107. The process of respiration is:

- A. an oxidation reaction which is endothermic
- B. a reduction reaction which is exothermic

C. a combination reaction which is endothermic

D. an oxidation reaction which is exothermic

Answer: D

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108. Which of the following can be decompose by the action of light?

A. $NaCl$

B. KCl

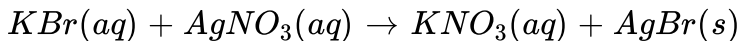
C. $AgCl$

D. $CuCl$

Answer: C

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109. Consider the reaction:



This is an example of :

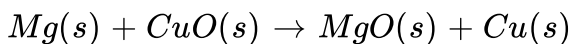
- A. decomposition reaction
- B. combination reaction
- C. double displacement reaction
- D. displacement reaction

Answer: C



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110. You are given the following chemical equation :



This equation represents :

- A. decomposition reaction as well as displacement reaction

B. combination reaction as well as double displacement reaction

C. redox reaction as well as displacement reaction

D. double displacement reaction as well as redox reaction

Answer: C



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111. When a green iron salt is heated strongly , its colour finally changes to brown and odour of burning sulphure is given out .

(a) Name the iron salt.

(b) Name the type of reaction that takes place during the heating of iron salt.

(c) Write a chemical equation for the reaction involved.



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112. A colourless lead salt, when heated , produces a yellow residue and brown fumes.

(a) Name the lead salt.

(b) Name the brown fumes.

(c) Write a chemical equation of the reaction involved.



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113. When hydrogen burns in oxygen, water is formed and when water is electrolysed, then hydrogen and oxygen are produced. What type of reaction takes place :

(a) in the first case.

(b) in the second case ?



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114. A strip of metal X is dipped in the blue coloured salt solution YSO_4 . After some time, a layer of metal Y from the salt solution is formed on the

surface of metal strip. X metal Z is used in galvanisation whereas metal Y is used in making electric wires. Metal X and metal Y together form an alloy Z.

(a) What could metal X be.

(b) What could metal Y be ?

(c) Name the metal salt YSO_4 .

(d) What type of chemical reaction takes place when metal X reacts with salt solution YSO_4 ? Write the equation of the chemical reaction involved.

(e) Name the alloy Z.



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115. When a black metal compound XO is heated with a colourless gas Y_2 , then metal X and another compound Y_2O are formed. Metal X is red-brown in colour which does not react with dilute acids at all. Gas Y_2 can be prepared by the action of a dilute acid on any active metal. The compound Y_2O is a liquid at room temperature which can turn anhydrous copper sulphate blue.

(a) What do you think is metal X ?

(b) What could be gas Y_2

(c) What is compound XO ?

(d) What is compound Y_2O

(e) Write the chemical equation of the reaction which takes place on heating XO with Y_2 .

(f) What type of chemical reaction is illustrated in the above equation.



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116. A metal X forms a water-soluble salt XNO_3 . When an aqueous solution of XNO_3 is added to the common salt solution, then a white precipitate of compound Y is formed along with sodium nitrate solution. Metal X is said to be the best conductor of electricity and it does not evolve hydrogen when put in dilute hydrochloric acid.

(a) What is metal X ?

(b) What is salt XNO_3 ?

(c) Name the compound Y. (d) Write the chemical equation of the reaction which takes place on reaction XNO_3 solution and common salt

solution giving the physical states of all the reactants and products.

(e) What type of chemical reaction is illustrated by the above equation?

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117. Two metals X and Y form the salts XSO_4 and Y_2SO_4 respectively. The solution of salt XSO_4 is blue in colour whereas that of Y_2SO_4 is formed along with a salt which turns the solution green. And when barium chloride solution is added to Y_2SO_4 solution, then the same white precipitate Z is formed along with colourless common salt solution.

(a) What could the metal X and Y be ?

(b) Write the name and formula of salt XSO_4

(c) Write the name and formula of salt Y_2SO_4

(d) What is the name and formula of white precipitate Z ?

(e) Write the name and formula of the salt which turns the solution green in the first case.

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118. A red-brown metal X forms a salt XSO_4 . When hydrogen sulphide gas is passed through an aqueous solution of XSO_4 , then a black precipitate of XS is formed along with sulphuric acid solution.

(a) What could the salt XSO_4 be

(b) What is the colour of salt XSO_4 ?

(c) Name the black precipitate XS.

(d) By using the formula of the salt obtained in (a) above, write an equation of the reaction which takes place when hydrogen sulphide gas is passed through its aqueous solution.

(e) What type of chemical reaction takes place in this case ?



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119. When a strip of red-brown metal X is placed in a colourless salt solution YNO_3 then metal Y is set free and a blue coloured salt solution $X(NO_3)_2$ is formed. The liberated metal Y forms a shining white deposit on the strip of metal X.

(a) What do you think metal X is ?

(b) Name the salt YNO_3 .

(c) What could be metal Y ?

(d) Name the salt $X(NO_3)_2$.

(e) What type of reaction takes place between metal X and salt solution YNO_3 ?



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120. A metal salt MX when exposed to light splits up to form metal M and a gas X_2 . Metal M is used in making ornaments whereas gas X_2 is used in making bleaching powder. The salt MX is itself used in black and white photography.

(a) What do you think metal M is ?

(b) What could be gas X_2 ?

(c) Name the metal salt MX.

(d) Name any two salt solutions which on mixing together can produce a precipitate of salt MX.

(e) What type of chemical reaction takes place when salt MX is exposed to light ? Write the equation of the reaction.



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121. Why should a magnesium ribbon be cleaned before burning in air?

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122. Write the balanced equation for the following chemical reactions.

(i) Hydrogen + Chlorine \rightarrow Hydrogen chloride

(ii) Barium chloride + Aluminium sulphate \rightarrow Barium sulphate +
Aluminium chloride

(iii) Sodium + Water \rightarrow Sodium hydroxide + Hydrogen

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123. Write a balanced chemical equation with state symbols for the following reactions.

(i) Solutions of barium chloride and sodium sulphate in water react to give insoluble barium sulphate and the solution of sodium chloride.

(ii) Sodium hydroxide solution (in water) reacts with hydrochloric acid solution (in water) to produce sodium chloride solution and water.

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124. A solution of a substance X^{TM} is used for whitewashing. (i) Name the substance X^{TM} and write its formula. (ii) Write the reaction of the substance X^{TM} named in (i) above with water.

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125. Why is the amount of gas collected in one of the test tubes in Activity 1.7 double of the amount collected in the other? Name this gas.

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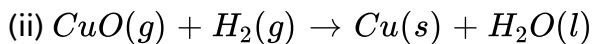
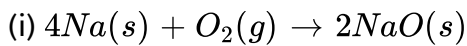
126. Why does the colour of copper sulphate solution change when an iron nail is dipped in it?

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127. Give an example of a double displacement reaction.

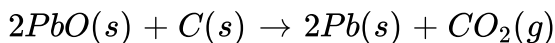
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128. Identify the substances that are oxidised and the substances that are reduced in the following reactions.



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129. Which of the statements about the reaction below are incorrect?



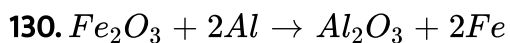
(a) Lead is getting reduced.

(b) Carbon dioxide is getting oxidised.

(c) Carbon is getting oxidised.

(d) Lead oxide is getting reduced.

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The above reaction is an example of a

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131. What happens when dilute hydrochloric acid is added to iron fillings?

Tick the correct answer.

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132. What is a balanced chemical equation? Why should chemical equations be balanced?

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133. Translate the following statements into chemical equations and then balance them:

(a) Hydrogen gas combines with nitrogen to form ammonia.

(b) Hydrogen sulphide gas burns in air to give water and sulphur dioxide

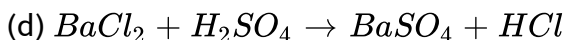
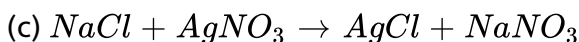
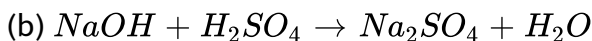
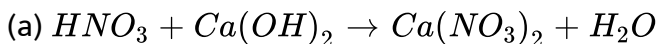
(c) Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.

(d) Potassium metal react with water to give potassium hydroxide and hydrogen gas.



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134. Balance the following chemical equations:



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135. Write the balanced chemical equations for the following reactions:

(a) Calcium hydroxide + Carbon dioxide \rightarrow Calcium carbonate + Water

(b) Zinc + Silver nitrate \rightarrow Zinc nitrate + Silver

(c) Aluminium + Copper chloride \rightarrow Aluminium chloride + Copper

(d) Barium chloride + Potassium sulphate \rightarrow Barium sulphate + Potassium chloride

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

(a) Barium + Potassium \rightarrow Barium + Potassium

chloride (aq) sulphate (aq) sulphate (s) chloride (aq)

(b) Zinc carbonate (s) \rightarrow Zinc oxide (s) + Carbon dioxide (g)

(c) Hydrogen (g) + Chlorine (g) \rightarrow Hydrogen chloride (g)

(d) Magnesium (s) + Hydrochloric acid (aq) \rightarrow Magnesium chloride (aq) + Hydrogen (g)



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



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138. Why is respiration considered an exothermic reaction? Explain.



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139. Why are decomposition reactions called the opposite of combination reactions? Write equations for these reactions.



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140. Write one equation each for decomposition reactions where energy is supplied in the form of heat, light or electricity.

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141. What is the difference between displacement and double displacement reactions? Write equations for these reactions.

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142. In the refining of silver, the recovery of silver from silver nitrate solution involved displacement by copper metal. Write down the reaction involved.

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143. What do you mean by a precipitation reaction? Explain by giving examples.

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144. Explain the following in terms of gain or loss of oxygen with two examples each.

(a) Oxidation

(b) Reduction

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145. A shiny brown coloured element $\hat{\sim}X\hat{\sim}$ ™ on heating in air becomes black in colour. Name the element $\hat{\sim}X\hat{\sim}$ ™ and the black coloured compound formed

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146. Why do we apply paint on iron articles?



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147. Explain why food products containing fats and oils (like potato chips) are packaged in nitrogen.



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148. Explain the following terms with one example each:

(a) Corrosion (b) Rancidity



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Questions Based On High Order Thinking Skills Hots

1. A solid substance P which is very hard is used in the construction of many buildings especially flooring. When substance P is heated strongly, it

decompose to form another solid Q and a gas R is given our Solid Q reacts with water with the release of a lot of heat to form a substance S. When gas R is passed into a clear solution of substance S, then a white precipitate of substance T is formed. The substance T has the same chemical composition as starting substance P.

- (a) What is substance P? Write its common name as well as chemical formula.
- (b) What is substance Q?
- (c) What is gas R?
- (d) What is substance S? What is its clear solution known as?
- (e) What is substance T? Name any two natural forms in which substance T occurs in nature



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