

St.JOHN'S RESIDENTIAL **PUBLIC SCHOOL**

AFFILIATED TO C.B.S.E

SONAGOPALPUR, SAMPATCHAK,
PATNA..7

ASSIGNMENTCHEMISTRY (1)

Std...Xth Prepared byS.K.VERMA

Chemical Reactions and Equations

Question 1

Why respiration is considered an exothermic process?

Question 2

On what basis is a chemical equation balanced?

Question 3

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

Question 4

Why should magnesium ribbon be cleaned before burning in air?

Question 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.

Question 6

What is wrong with the following chemical equation?



Correct and balance it.

Question 7

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

Question 8

Why photosynthesis is considered an endothermic reaction?

Question 9

How will you indicate the following effects in a chemical equation?

- (a) A solution made in water
- (b) Exothermic reaction
- (c) Endothermic reaction

Question 10

Translate the following statements 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 pentaoxide.
- (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.

Question 11

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

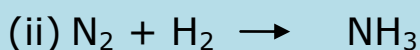
Question 12

Complete and balance the following equations:



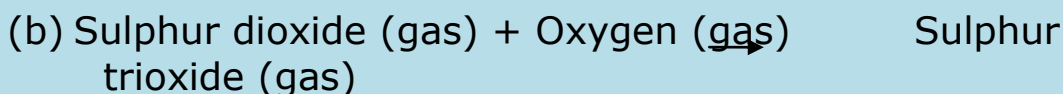
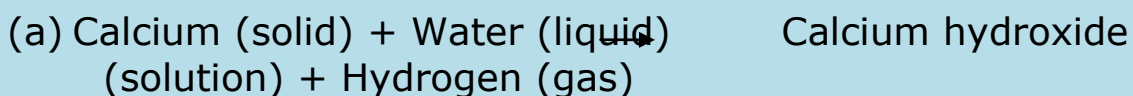
Question 13

Correct and balance the following equations:



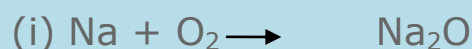
Question 14

Write complete balanced equations for the following reactions:



Question 15

Balance the following equations:



Question 16

Fill in the 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 _____.

Question 17

- (a) Give one example of a chemical reaction.
- (b) State two characteristics of the chemical reaction which takes place when dilute sulphuric acid is poured over zinc granules.
- (c) Give two characteristics of the chemical reaction which occurs on adding potassium iodide solution to lead nitrate solution.

Question 18

- (a) What is a chemical equation? Explain with the help of an example.
- (b) Giving examples, state the difference between balanced and unbalanced chemical equations.

Question 19

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

Question 20

Give a balanced chemical reaction when an aqueous calcium hydroxide solution (lime water) reacts with carbon dioxide gas to produce a solid calcium carbonate precipitate and water.

Question 21

- (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.

Question 22

- (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:
$$\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$$
- (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."

Question 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:



Question 24

Write the balanced chemical 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.

Question 25

- (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.

Question 26

- (a) Substitute formulae for names and balance the following equations:
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 solution to produce sodium chloride solution and water.

Question 27

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.

Question 28

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

Question 29

Translate the following statement into chemical equation and then balance it:

Barium chloride solution reacts with aluminium sulphate solution to form a precipitate of barium sulphate and aluminium chloride solution.

Question 30

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.

Question 31

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

Question 32

- (a) State the various characteristics of chemical reactions.
- (b) State one characteristics each of 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) Quick lime is treated with water
 - (v) Wax is burned in the form of a candle

Question 33

- (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

Question 34

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.

Question 35

When water is added gradually to a white solid X, a hissing sound 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 characteristics of chemical reactions is illustrate by this example?

Question 36

A silvery-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 water 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.

Question 37

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?

Question 38

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 B?
- (c) What do you think could be C?
- (d) What is material D? Where is it found?
- (e) Name the organic compound E.

(f) What is gas F? Name the natural process during which it is released.

Question 39

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

Question 40

Name the various types of chemical reactions.

Question 41

Why does the colour of copper sulphate solution change when an iron nail is kept immersed in it?

Question 42

Write the balanced chemical equation for the following reaction:
Zinc + Silver nitrate → Zinc nitrate + Silver

Question 43

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)?

Question 44

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

Question 45

State an important use of decomposition reactions.

Question 46

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

Question 47

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

Question 48

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

- (a) With electricity
- (b) By applying heat

Question 49

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

Question 50

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

Question 51

Write one equation each for the decomposition reactions where energy is supplied in the form of (a) heat, (b) light, and (c) electricity.

Question 52

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

Question 53

What type of chemical reaction 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?

Question 54

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

Question 55

(a) Define a combination reaction.

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

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

Question 56

(a) Give an example of an endothermic reaction?

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

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

Question 57

(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?

Question 58

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

Question 59

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.

