



Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 32

1 Key words**[4]**

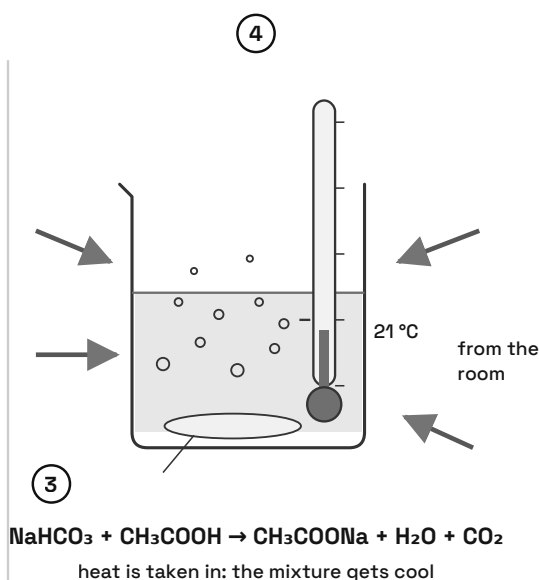
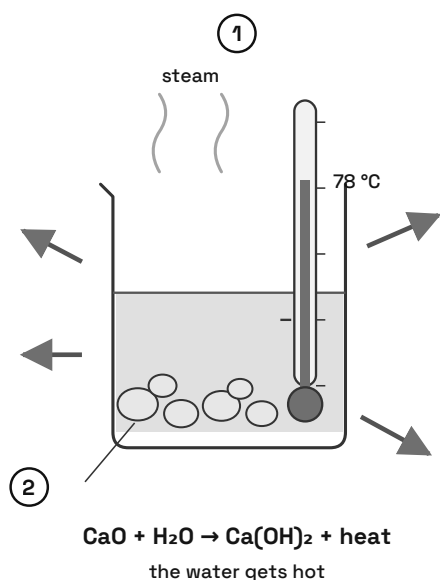
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

catalyst coefficient conservation of mass endothermic exothermic products
reactants subscripts unbalanced word equation

The substances that take part in a chemical reaction are the _____, and the new substances formed are the _____. A chemical equation written with the names of the substances is a _____. An equation in which the number of atoms of some element is not the same on both sides is an _____ equation. The number written in front of a formula to balance an equation is its _____. An equation must balance because of the law of _____. A reaction that releases heat is an _____ reaction, and one that absorbs heat is an _____ reaction.

2 Label the diagram**[2]**

The diagram shows two reactions. Write the word or words that belong in place of 1 to 4. Each carries 0.5 mark.



1. _____

2. _____

3. _____

4. _____



[5]

Choose the correct option for each of the following questions.

- i. Which of these happen during a chemical reaction? A. exchange of atoms; B. combination of atoms; C. breaking apart of molecules; D. friction between atoms. [1]
- a. A, C and D
b. A, B and D
c. B, C and D
d. A, B and C
- ii. Which of these is a formula equation? [1]
- a. carbon + oxygen → carbon dioxide
b. $C + O_2 \rightarrow CO_2$
c. carbon dioxide is formed when carbon burns
d. reactants → products
- iii. Which group gives examples of chemical changes only? [1]
- a. forming curd from milk with lemon juice, rusting of iron, forming ice from water
b. forming ash when wood burns, forming vapor from water, forming curd from milk
c. cooking rice, decaying of dead animals, digestion of food in the stomach
d. making toys from wood or mud, rusting of iron, forming ash when wood burns
- iv. Substances A and B can each be held easily in their own test tubes, but when they are mixed in one test tube, it gets too hot to hold. Why? [1]
- a. the reaction is exothermic
b. the reaction is endothermic
c. the reaction is both endothermic and exothermic
d. the reaction is first endothermic, then exothermic
- v. What are the reactants in this incomplete equation? $Zn + \dots \rightarrow ZnCl_2 + H_2$ [1]
- a. zinc and sodium chloride
b. zinc and chlorine
c. zinc and water
d. zinc and hydrochloric acid

[3]

Write very short answers to the following questions.

- What is the number written in front of a formula in a chemical equation called? [1]

- What does (aq) after a formula in an equation mean? [1]

- Why must the small numbers (subscripts) inside a formula never be changed when balancing an equation? [1]



5 Short answers

[6]

Write short answers to the following questions.

- a. Write any two differences between balanced and unbalanced chemical equations.

[2]

- b. Write any two differences between endothermic and exothermic reactions.

[2]

- c. Someone is cooking food in an oven fueled by firewood. Which reactions are exothermic and which are endothermic?

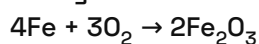
[2]

6 Long answer

[4]

Write a long answer to the following question.

Study this balanced equation for iron combining with oxygen, and answer. (Fe = 56, O = 16)



- What are the reactants and the product? (1)
- How many atoms of each element are there in the reactants and in the products? (1)
- What masses of iron and oxygen react, and what mass of product is formed? (1)
- Write two more things that a balanced equation tells us. (1)

7 Balancing equations

[6]

Balance these equations. Show your working.

- a. Write as a balanced formula equation: nitrogen + hydrogen → ammonia

[1]



b. $\text{Fe} + \text{O}_2 \rightarrow \text{Fe}_2\text{O}_3$ [1]

c. $\text{Ca} + \text{N}_2 \rightarrow \text{Ca}_3\text{N}_2$ [1]

d. Complete and balance: $\text{H}_2\text{SO}_4 + \text{NaOH} \rightarrow \dots + \text{H}_2\text{O}$ [1]

e. $\text{HNO}_3 + \text{Ca}(\text{OH})_2 \rightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O}$ [2]

Count the atoms of each element on both sides in the table, then balance.

Element	Left side	Right side
Ca		
N		
O		
H		

Answer: _____

8 Think [2]

Think, then answer.

When baking soda is added to vinegar, the reaction takes in heat. Then why does the glass feel cold to your hand?

9 Activity: Hot or cold? (not marked)

Mix each pair in a glass and feel the outside of the glass, or use a thermometer. (Your teacher should handle the quicklime: it burns the skin.)

What was mixed	Temperature (or feel) before	After mixing	Exothermic or endothermic?
vinegar and baking soda			
lemon juice and baking soda			
water and quicklime (shown by the teacher)			

