Unit 8 · Chemical Reaction

WORKSHEET

Full marks 45

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 45

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	**degree of polymerization**	**enzymes**	**hydrolysis**	**monomer unit**	**neutralization**
oxidation	**photochemical reaction**	**polymer**	**precipitate**		

Two solutions that react to form an insoluble solid give a _____. A reaction in which a substance reacts with water, and the water molecule is split, is called _____. A substance that changes the rate of a reaction without any permanent chemical change is a _____, and those of living things are called _____. A reaction started or driven by light is a _____. In the electronic sense, the loss of electrons is _____. A very large molecule made of many monomer units is a _____, and the number of repeating units in one chain is its _____.

2 Multiple choice [5]

Choose the correct option for each of the following questions.

i. Which is a condensation polymer? [1]

a. polythene **b.** polystyrene
c. natural rubber **d.** nylon

ii. An aqueous solution of sodium carbonate is basic because: [1]

a. it contains hydroxide ions in its formula
b. sodium is a metal
c. it is the salt of a weak acid and a strong base, and it hydrolyzes
d. it is the salt of a strong acid and a weak base

iii. Which statement about a catalyst is **wrong**? [1]

a. it is left unchanged in mass and composition at the end of the reaction
b. a small amount of it is enough
c. it increases the amount of product formed
d. it is specific to one reaction or a few

iv. In $CuO + H_2 \rightarrow Cu + H_2O$, the oxidizing agent is: [1]

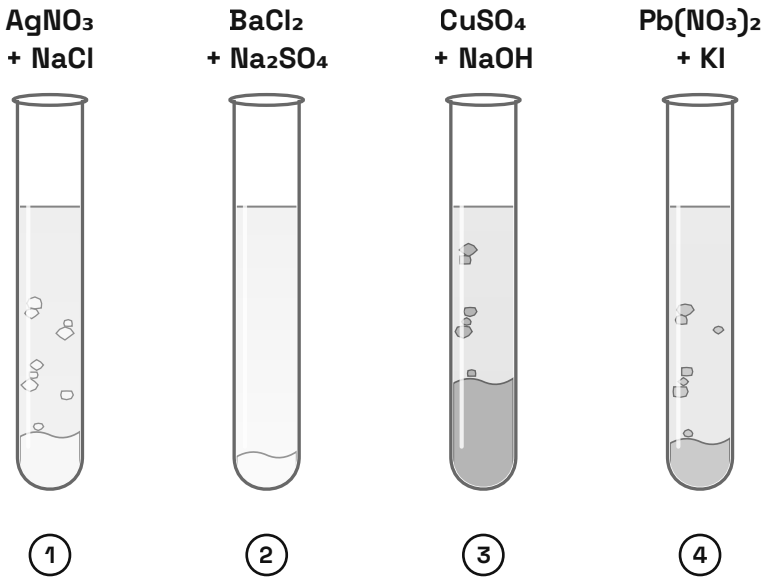
a. CuO **b.** H_2
c. Cu **d.** H_2O

v. A sample of polythene has a molar mass of 42,000 g/mol. Its degree of polymerization is: (C = 12, H = 1) [1]

a. 1,000 **b.** 1,500
c. 3,000 **d.** 42,000

3 Label the diagram [4]

The diagram shows four test tubes a few minutes after the two solutions were mixed. In place of 1 to 4, write the precipitate's formula and its color. Each carries 1 mark.



1. _____ **2.** _____

3. _____ **4.** _____

4 Very short answers [4]

Write very short answers to the following questions.

a. Write the ionic equation for the reaction of silver nitrate and sodium chloride solutions. [1]

b. Why are hydrogen peroxide and silver nitrate sold in brown bottles? [1]

c. Is the solution of sodium sulphate in water acidic, basic or neutral? [1]

d. Name the monomer of natural rubber. [1]

5 Short answers [8]

Write short answers to the following questions.

a. An aqueous solution of ammonium chloride turns blue litmus red. Give a reason. [2]

b. Oxidation and reduction always take place together. Give a reason. [2]

c. Natural rubber is vulcanized before it is made into tyres. Give a reason. [2]

d. The handle of a pressure cooker is made of Bakelite, not polythene. Give a reason. [2]

6 Long answers [8]

Write long answers to the following questions.

a. What is hydrolysis? Explain, with equations, why a solution of sodium ethanoate is basic and a solution of sodium chloride is neutral. [4]

b. Show, with half-equations, that the reaction of zinc with copper sulphate solution is a redox reaction. **[4]**

7 Numerical problems **[9]**

Solve the following problems. Show your working.

a. 6.8 g of hydrogen peroxide is decomposed completely with 1 g of manganese dioxide. Find a. the volume of oxygen at STP, b. the mass of water formed, c. the mass of manganese dioxide left. (H = 1, O = 16) **[4]**

Answer:

b. A sample of PVC has an average degree of polymerization of 1,600. Find its average molar mass. (C = 12, H = 1, Cl = 35.5) **[2]**

Answer:

c. 16.2 g of starch, $(C_6H_{10}O_5)_n$, is hydrolyzed completely to glucose: $(C_6H_{10}O_5)_n + n\ H_2O \rightarrow n\ C_6H_{12}O_6$. What mass of water is used, and what mass of glucose is formed? (C = 12, H = 1, O = 16) **[3]**

Answer:

8 Think [3]

Rice and a cotton cloth are both made of chains of glucose. You can digest the rice but not the cotton, yet a cow lives on grass, whose cellulose is the same polymer as cotton's. What does this tell you about hydrolysis and enzymes?

9 Activity: Which salts change an indicator? (not marked)

Dissolve a spoonful of each salt in half a glass of water. Dip red and blue litmus paper in each (at home, a strip of paper dried from turmeric paste). Guess first. Work with your teacher for ammonium chloride.

Salt	My guess	Red litmus	Blue litmus	Acidic, basic or neutral?
table salt				
washing soda				
baking soda				
alum (*fitkiri*)				
ammonium chloride				