

Unit B Review– Matter & Chemical Change

Topic 1

1. Identify the following WHMIS symbols:



2. Differentiate between pure substances and mixtures and provide 2 examples of each.

3. Differentiate between elements and compounds and classify each of the following examples:

- | | | | |
|-------------|-----------|-------------|-------------------|
| a. Hydrogen | b. Sodium | c. Water | d. Salt |
| e. Sucrose | f. Carbon | g. Nitrogen | h. Carbon dioxide |

4. Differentiate between solutions (homogeneous mixtures) and mechanical (heterogeneous) mixtures and provide 2 examples of each. What would you classify acid rain as?

Topic 2

1. Differentiate between physical and chemical properties and classify each of the following examples:

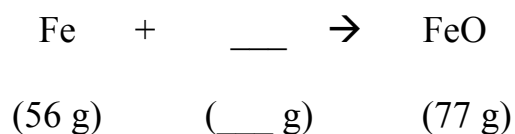
- | | | | |
|-------------------|------------------|------------------|------------------|
| a. Reactivity | b. Malleability | c. Crystal shape | d. Density |
| e. Combustibility | f. Ductility | g. Stability | h. Colour |
| i. Conductivity | j. Melting point | k. Toxicity | l. Boiling point |

2. Differentiate between physical and chemical changes and provide examples of each.

Topic 3

1. Explain the law of conservation of mass. Why must the system be sealed?

2. Use the above law to fill in the following blanks:



3. Name and explain the models of the atoms developed by:

a. Dalton:

b. Thompson:

c. Rutherford:

d. Bohr:

Topic 4

1. Differentiate between metals and nonmetals and provide 6 characteristics of each. Provide 3 examples of each as well.

2. Are metals good or poor conductors? Good or poor insulators?

3. Differentiate between period and group. What do their numbers represent?

4. Why are certain groups referred to as families? Provide descriptions of the following 4 families:
 - a. alkali metals:

 - b. alkaline earth metals:

 - c. halogens:

 - d. Noble gases:

5. Explain how the periodic table is organized in terms of reactivity or stability.

6. How do you determine if an element is solid, liquid or gas as S.A.T.P?

Topic 5

1. Differentiate between atomic number and atomic mass.
2. Determine the atomic number, atomic mass, proton number, electron number and neutron number for the following elements:

Element	Atomic #	Atomic mass	Proton #	Electron #	Neutron #
H					
C					
Ne					
Na					
Mg					
Al					
P					
Cl					

Topic 6

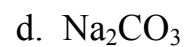
1. Differentiate between the properties of ionic and molecular compounds.
2. Which of the above compounds is a good electrical conductor *when* dissolved in water. Did they share or transfer electrons in order to become more stable?

3. Explain the naming rules for both ionic and molecular compounds and name the following random list of compounds:

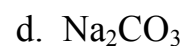
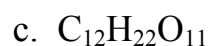
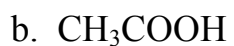


4. Draw molecular models that represent H_2O , CH_4 and NH_3 .

5. Determine the ratio of metals to nonmetals in the following compounds:



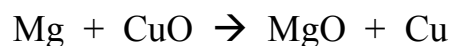
6. For each of the following compounds, determine number of each type of element and the total number of elements:



Topic 7

1. Provide 5 proofs (evidence) of a chemical reaction.

2. Identify the reactants and the products in the following reaction:



3. Differentiate between endothermic and exothermic reactions and provide an example of each. How would you classify photosynthesis and cellular respiration (combustion of glucose in our cells)?

Topic 8

1. Explain how temperature, stirring, surface area and concentration can increase reaction rate. How could you decrease the reaction rate?

2. What is corrosion and how can you prevent it? What happens to mass of the metal as it corrodes?
3. What is combustion? Which reactants and products are common to both combustion and oxidation?
4. What are enzymes and where are they found?

Science General

1. Differentiate between manipulated, responding, and controlled variables.
2. What is the relationship between observations, hypotheses, theories, and laws?

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Topic 1



1. Identify the following WHMIS symbols:
2. Differentiate between pure substances and mixtures and provide 2 examples of each.
3. Differentiate between elements and compounds and classify each of the following examples:
 - a. Hydrogen
 - b. Sodium
 - c. Water
 - d. Salt
 - e. Sucrose
 - f. Carbon
 - g. Nitrogen
 - h. Carbon dioxide
4. Differentiate between solutions (homogeneous mixtures) and mechanical (heterogeneous) mixtures and provide 2 examples of each. What would you classify acid rain as?

Topic 2

1. Differentiate between physical and chemical properties and classify each of the following examples:
 - a. Reactivity
 - b. Malleability
 - c. Crystal shape
 - d. Density
 - e. Combustibility
 - f. Ductility
 - g. Stability
 - h. Colour
 - i. Conductivity
 - j. Melting point
 - k. Toxicity
 - l. Boiling point
2. Differentiate between physical and chemical changes and provide examples of each.

Topic 3

1. Explain the law of conservation of mass. Why must the system be sealed?
2. Use the above law to fill in the following blanks:
$$\begin{array}{ccccccc} \text{Fe} & + & \underline{\hspace{1cm}} & \rightarrow & \text{FeO} \\ (56 \text{ g}) & & (\underline{\hspace{1cm}} \text{ g}) & & (77 \text{ g}) \end{array}$$
3. Name and explain the models of the atoms developed by Dalton, Thompson, Rutherford and Bohr

Topic 4

1. Differentiate between metals and nonmetals and provide 6 characteristics of each. Provide 3 examples of each as well.
2. Are metals good or poor conductors? Good or poor insulators?
3. Differentiate between period and group. What do their numbers represent?
4. Why are certain groups referred to as families? Provide descriptions of the following 4 families: alkali metals, alkaline earth metals, halogens and the Noble gases.
5. Explain how the periodic table is organized in terms of reactivity or stability.
6. How do you determine if an element is solid, liquid or gas as S.A.T.P?

Topic 5

1. Differentiate between atomic number and atomic mass.
2. Determine the atomic number, atomic mass, proton number, electron number and neutron number for the following elements:
 - a. H
 - b. C
 - c. Ne
 - d. Na
 - e. Mg
 - f. Al
 - g. P
 - h. Cl

Topic 6

1. Differentiate between the properties of ionic and molecular compounds.
2. Which of the above compounds is a good electrical conductor *when* dissolved in water. Did they share or transfer electrons in order to become more stable?
3. Explain the naming rules for both ionic and molecular compounds and name the following random list of compounds:
 - a. NH₃
 - b. NaCl
 - c. Li₃P
 - d. CCl₄
 - e. LiCl
 - f. CH₄
 - g. SO₃
 - h. MgCl₂
4. Draw molecular models that represent H₂O, CH₄ and NH₃.
5. Determine the ratio of metals to nonmetals in the following compounds:
 - a. Li₃P
 - b. NaOH
 - c. AlBr₃
 - d. Na₂CO₃
6. For each of the following compounds, determine number of each type of element and the total number of elements:
 - a. NaHCO₃
 - b. CH₃COOH
 - c. C₁₂H₂₂O₁₁
 - d. Na₂CO₃

Topic 7

1. Provide 5 proofs (evidence) of a chemical reaction.
2. Identify the reactants and the products in the following reaction:
$$\text{Mg} + \text{CuO} \rightarrow \text{MgO} + \text{Cu}$$
3. Differentiate between endothermic and exothermic reactions and provide an example of each. How would you classify photosynthesis and cellular respiration (combustion of glucose in our cells)?

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