

MARYMOUNT CATHOLIC SECONDARY SCHOOL**2022 END OF TERM 2 EXAMINATION****FORM 2 CHEMISTRY****(100 marks)****Subject Number: J038****Tuesday, 31 May****Time Allowed: 2 hours
7:30 – 9:30 am****Instructions**


- 1. This paper contains 13 printed pages. Please check.**
- 2. Write your name clearly in the space provided on every page of the question paper.**
- 3. Answer **all** the **33** questions.**
- 4. This paper contains Sections **A**, **B** and **C**. For Section **A**, encircle the letter representing the right answer to each question. Sections **B** and **C** should be answered in the spaces provided.**
- 5. In the table provided on this page, **tick** against the question number of the question you have answered.**
- 6. Hand in your paper to the invigilator when time is called to stop writing.**

Question Number	Tick if answered	Do not write in these columns	
1-20			
21			
22			
23			
24			
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31			
32			
33			
Total			

SECTION A (20 marks)

Encircle the letter of your choice representing the right answer.

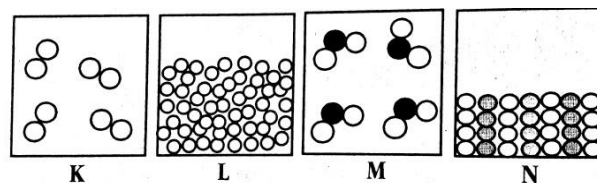
1. What happens to atoms in a chemical reaction?
 - A. They lose mass
 - B. They rearrange
 - C. They gain mass
 - D. They decompose
2. Which laboratory apparatus is used for separating a mixture of immiscible liquids?
 - A. Filter funnel
 - B. Liebig condenser
 - C. Separating funnel
 - D. Deflagrating spoon
3. Examples of alkaline earth metals are _____.
 - A. Calcium, magnesium and lithium.
 - B. Sodium, lithium and beryllium.
 - C. Magnesium, boron and calcium.
 - D. Beryllium, calcium and magnesium.
4. Which of the following is not an organic compound?
 - A. HCOOH
 - B. C_2H_6
 - C. CO_2
 - D. CH_3OH
5. Which acid is used in the manufacture of ink and processing of leather?
 - A. Tartaric acid
 - B. Ascorbic acid
 - C. Tannic acid
 - D. Malic acid
6. What is the meaning of the hazard symbol in **Figure 1** below?



 - A. Very cold
 - B. Very hot
 - C. Radioactive
 - D. Laser beam
7. How do non-metal atoms react together to form compounds?
 - A. By attracting and accepting electrons.
 - B. By donating their outer electrons.
 - C. By sharing some of their outer electrons.
 - D. By gaining and sharing electrons.

8. How is geochemist an important career?
- A. It helps to locate chemical industrial sites by using geographical maps.
 - B. It gives information about the distribution of chemical elements in rocks and minerals.
 - C. It helps to analyze soil profile, composition and texture.
 - D. It provides solutions to problems associated with soil pollution.
9. In what way is ammonium hydroxide useful?
- A. Making mortar used in construction of buildings.
 - B. Fighting fires when used in fire extinguishers.
 - C. Making soap and cleaning chemicals.
 - D. Neutralizing acids on teeth and in the stomach.
10. Which one of the following substances is a compound?
- A. Glucose
 - B. Gold
 - C. Bronze
 - D. Bromine

Figure 2 is a diagram showing boxes **K**, **L**, **M** and **N** containing substances. Use it to answer **Questions 11** and **12**.



11. Which box contains a solid?
- A. K
 - B. L
 - C. M
 - D. N
12. Which gas contains a gaseous compound?
- A. K
 - B. L
 - C. M
 - D. N
13. Why do isotopes have similar chemical properties?
- A. They have the same number of outer electrons.
 - B. They have more protons than neutrons.
 - C. They have the same number of neutrons.
 - D. They do not experience shielding effect.

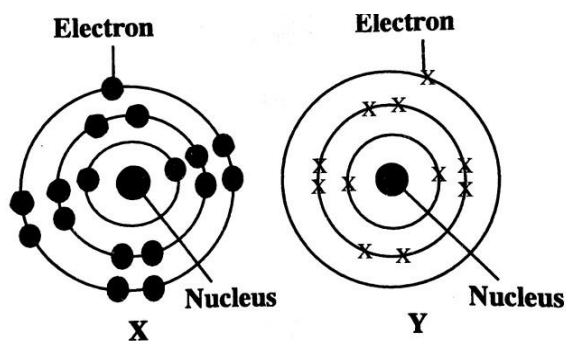
14. Which one is the chemical formula of silver nitrate?

- A. AgNO_2
- B. AgNO_3
- C. AgNO_4
- D. Ag_2NO_3

15. Alkanes are the organic compounds which are also called _____

- A. unsaturated hydrocarbons
- B. oxyhydrocarbons
- C. saturated hydrocarbons
- D. organic oils

Figure 3 is a diagram showing atoms **X** and **Y**. Use it to answer **Questions 16** and **17**.



16. Identify atom **Y**.

- A. Oxygen
- B. Sodium
- C. Calcium
- D. Chlorine

17. Name the substance that is formed when atom **X** reacts with atom **Y**.

- A. KCl
- B. CaF_2
- C. LiF
- D. NaCl

18. How many hydrogen atoms are present in three molecules of ethanol

($\text{C}_2\text{H}_5\text{OH}$)?

- A. 6
- B. 15
- C. 18
- D. 27

19. What colour does universal indicator give in a neutral solution?

- A. Blue
- B. Green
- C. Orange
- D. Yellow

20. Which of the following is a molecular formula of a compound formed when lithium ions (Li^+) react with oxide ions (O^{2-})?

- A. LiO_2
- B. Li_2O
- C. LiO
- D. Li_2O_2

SECTION B (50 marks)

Answer **all** questions in this section in the spaces provided.

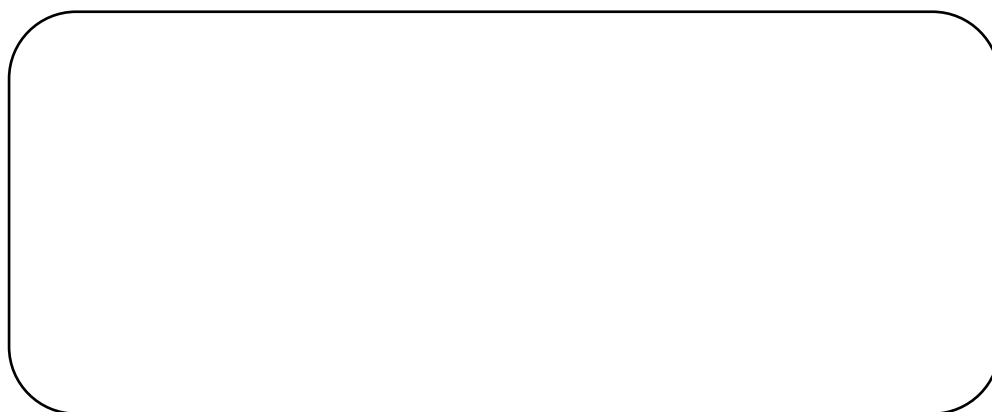
21. a. Define 'homologous series'

(1 mark)

b. Write the general formula of alkanes?

(1 mark)

c. Draw the structural formula of an alkane with four carbon atoms.



(1 mark)

d. Name the compound drawn in **1. c.** above.

(1 mark)

e. Why are alkanes non-conductors of electricity both in solid and liquid state?

(2 marks)

22. a. Determine the type of solution when carbon dissolves in iron to produce steel.

_____ (1 mark)

b. State any **two** ways of making a saturated solution unsaturated.

i. _____ (1 mark)

ii. _____ (1 mark)

c. How does a diatomic molecule differ from a monoatomic molecule?

(2 marks)

23. a. Write a balanced chemical equation for the reaction between potassium and fluorine.

(3 marks)

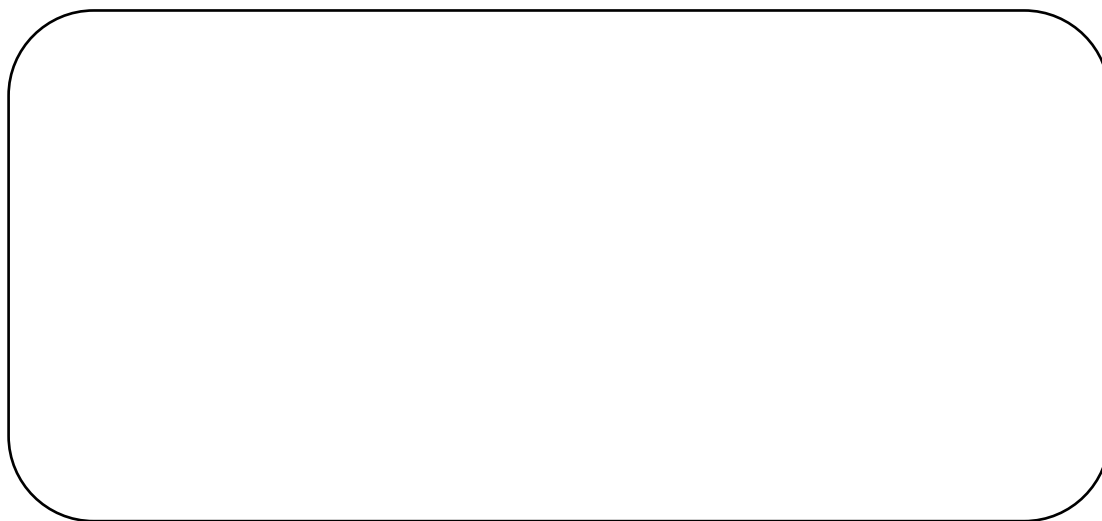
b. Describe the trend in electronegativity of atoms down a group of the periodic table.

(2 marks)

24. a. Define an element.

(1 mark)

b. Find the percentage composition of hydrogen in $\text{Ca}(\text{OH})_2$. (A_r : Ca = 40, O = 16, H = 1)



(3 marks)

25. a. Which gas is formed when an acid corrodes a metal?

_____ **(1 mark)**

b. What are alkalis?

_____ **(1 mark)**

c. Name the acid mostly found in animal fat and vegetable oil.

_____ **(1 mark)**

d. Explain any **one** application of neutralization.

_____ **(2 marks)**

26. a. Mention a halogen that is used as an antiseptic to treat fresh external wounds.

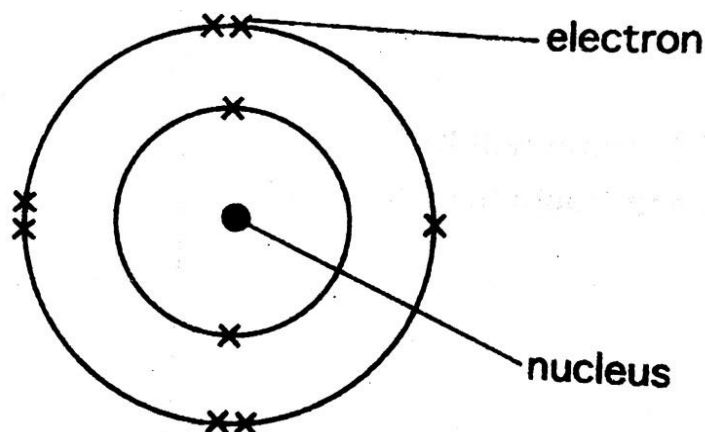
_____ **(1 mark)**

b. State any **two** physical properties of halogens.

i. _____ (1 mark)

ii. _____ (1 mark)

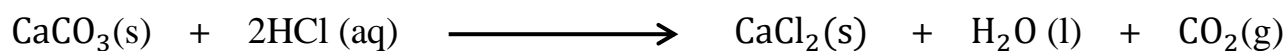
Figure 4 is a diagram showing the structure of an atom. Use it to answer **Question 26.c**.



c. Calculate the mass number of the atom given that it has 10 neutrons.

(2 marks)

27. a. Name the reactants given in the following chemical equation:



_____ (2 marks)

- b.** Work out the mass of $\text{CaCO}_3(\text{s})$ that would be needed to produce 11g of $\text{CO}_2(\text{g})$ according to the equation in **27.a.** above. (A_r : Ca = 40, C = 12, O = 16)



(3 marks)

- 28. a.** Give any **two** derived physical quantities.

i. _____ **(1 mark)**

ii. _____ **(1 mark)**

- b.** Convert **354.05mg** to **g** and approximate the answer to 2 significant figures.



(3 marks)

29. a. Define ‘scientific investigation’

(1 mark)

b. What is the purpose of a conclusion during a scientific investigation?

(1 mark)

c. Explain the problem that might be encountered if you wanted to measure the temperature of a room and you held a thermometer by the bulb.

(2 marks)

30. a. Define ‘diffusion’

(1 mark)

b. State any **two** changes of state that result from cooling.

(2 marks)

c. Describe how particles of matter are packed in solids, liquids and gases.

(3 marks)

SECTION C (30 marks)

31. The **Table** below shows quantities of ingredients P, Q, R and S, combined to make a sample birthday cake.

Ingredient	Quantity (g)	Percentage of each ingredient (%)	Angle of sector in a pie chart (degrees)
P	15		
Q	5		
R	11		
S	19		
Total	50		

- a.** Complete the **Table** above by filling in the **two** blank columns. **(5 marks)**
- b.** Use the data from the **Table** to construct a pie chart in the space below. **(5 marks)**

32. a. Explain how the reactivity of group VII elements differs from that of group VI elements of the periodic table.

[illegible]

b. Describe how the pH of a new brand of soap powder can be determined using universal indicator.

[illegible]

33. Describe an experiment that could be conducted to show that solubility of sugar is faster in hot water than in cold water. Your description should include aim of experiment, materials, procedure and expected results.

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END OF QUESTION PAPER

(10 marks)