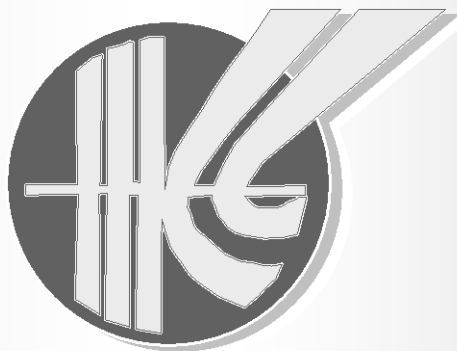


**4NA****Session 1**

Candidate Name: \_\_\_\_\_ ( ) Class: \_\_\_\_\_

**KRANJI SECONDARY SCHOOL**  
**Preliminary Examination**  
**Secondary 4 Normal (Academic)****SCIENCE (CHEMISTRY)**  
Paper 3 Multiple Choice**5105/03**  
**5107/03**

Friday

**2 August 2024**Papers 3 and 4  
1 hour 15 minutes

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Additional Materials: Multiple Choice Answer Sheet

**INSTRUCTIONS TO CANDIDATES**There are **twenty** questions in this paper. Answer **all** questions.For each question there are four possible answers, **A, B, C** and **D**.Choose the one you consider to be correct and record your choice in **soft pencil** on the OMR provided.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

You are advised to spend no more than **30 minutes** on Paper 3.

You may proceed to answer Paper 4 as soon as you have completed Paper 3.

Any rough working should be done in this booklet.

A copy of the Periodic Table is printed on page 7.

The use of an approved scientific calculator is expected, where appropriate.

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**Set by: Mr Joel Lee**

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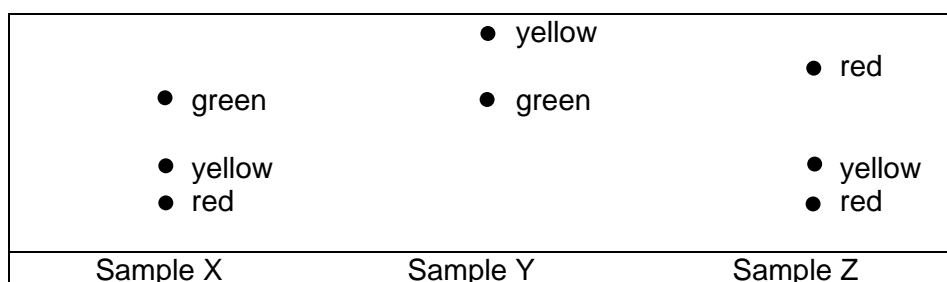
This Question Paper consists of **7** printed pages and **1** blank page.**[Turn over**

- 1 A student wishes to add exactly  $15.8 \text{ cm}^3$  of alkali to exactly  $25.0 \text{ cm}^3$  of acid.

Which apparatus should the student use to measure these volumes?

	alkali	acid
A	burette	beaker
B	burette	pipette
C	measuring cylinder	pipette
D	pipette	burette

- 2 The diagram below shows a chromatogram obtained from three different samples of food colouring, X, Y and Z.



How many different **yellow** dyes are present in the samples?

- A 1  
B 2  
C 3  
D 4
- 3 Which of the following substances is a liquid at room temperature ( $25^\circ\text{C}$ )?

	melting point/ $^\circ\text{C}$	boiling point/ $^\circ\text{C}$
A	-117	10
B	-20	80
C	-5	15
D	35	120

- 4 Which of the following statements regarding liquids and gases is false?

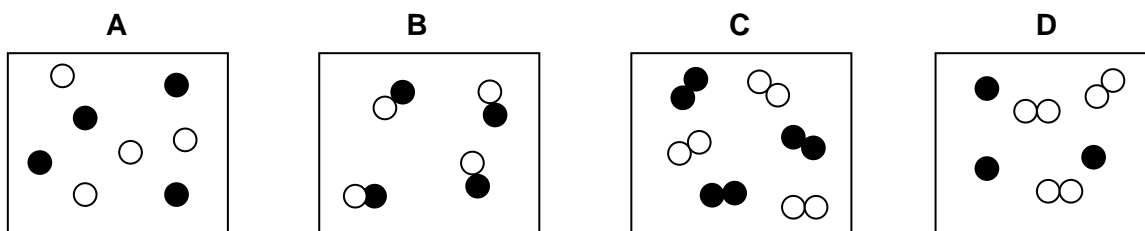
- A Both gas and liquid particles are disorderly arranged.  
B Gas particles are much further apart than liquid particles.  
C Gas particles are much smaller than liquid particles.  
D When a liquid turns into a gas, its particles gain energy.

- 5 An atom of nickel is represented by the symbol  $^{59}_{28}\text{Ni}$ .

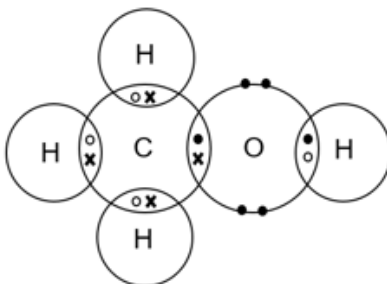
How many neutrons does this nickel atom contain?

- A 28  
B 31  
C 59  
D 87

- 6 Which of the following diagrams does **not** represent a mixture?



- 7 The 'dot-and-cross' diagram shows a molecule of methanol.



Which of the following statements is false?

- A Each carbon atom shares four electrons in total.  
B Each hydrogen atom only forms one bond.  
C The chemical formula of methanol is  $\text{CH}_4\text{O}$ .  
D There is a double bond between the carbon and oxygen atom.
- 8 An oxide of nitrogen  $\text{N}_x\text{O}_y$  has a relative molecular mass of 92.

What are the values of  $x$  and  $y$ ?

	$x$	$y$
A	1	1
B	1	2
C	2	4
D	4	4



13 Which is a property of **all** metals?


- A They conduct electricity.
- B They have high melting points.
- C They react readily with oxygen.
- D They react vigorously with water.

14 A student carried out experiments on three different metals with cold water and steam.

They recorded their results in the following table.

metal	with cold water	with steam
R	no reaction	hydrogen formed
S	no reaction	no reaction
T	hydrogen formed	hydrogen formed

What is the order of reactivity of the metals?

	most reactive  least reactive		
A	R	S	T
B	S	R	T
C	T	R	S
D	T	S	R

15 Which of the following methods is the least effective in preventing an iron nail from rusting?

- A Coating the iron nail with oil
- B Galvanising the iron nail with zinc
- C Painting the iron nail
- D Washing the iron nail with water

16 Which row describes the main processes in the carbon cycle correctly?

	give(s) out carbon dioxide	take(s) in carbon dioxide
A	combustion	photosynthesis, respiration
B	combustion, respiration	photosynthesis
C	photosynthesis	combustion, respiration
D	photosynthesis, respiration	combustion

17 Which statement describes a homologous series?

- A All compounds have different chemical properties.
- B All compounds have the same general formula.
- C All compounds have the same names.
- D All compounds have the same physical properties.

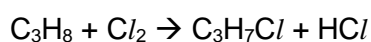
**18** A student makes the following statements about biofuels.

- 1 Biofuels can be made from natural gas.
- 2 Biofuels can be made from plants.
- 3 Biofuels have no impact on the environment.

Which of the statements is/are true?

- A** 2 only
- B** 1 and 2
- C** 2 and 3
- D** 1, 2 and 3

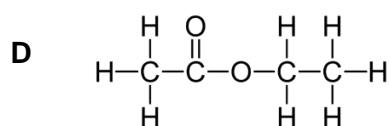
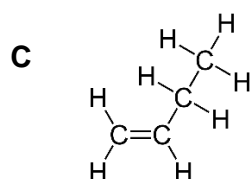
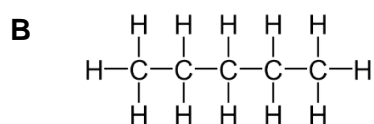
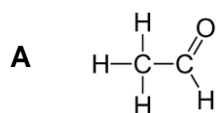
**19** Propane reacts with chlorine under UV light according to the following reaction.



What type of reaction is this?

- A** addition
- B** combustion
- C** cracking
- D** substitution

**20** Which diagram represents an unsaturated hydrocarbon?





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