Bergvliet High School

GRADE 8

NATURAL SCIENCES:

Science Exam

13 November 2024

MARKS: 60

TIME: 60 min

EXAMINER: K. Stuck

MODERATOR/S: Ab, Vh, La, Bo, Oc

This question paper consists of 9 pages. Disconnect this page and attach it to the front of your answer script.

Name:	**Class:**	**Teacher: Vh/La/Ab/Sk/**

For official use only			
Question 1	Marker	Moderator	10
Question 2	Marker	Moderator	5
Question 3	Marker	Moderator	17
Question 4	Marker	Moderator	20
Question 5	Marker	Moderator	8
Total	Marker	Moderator	60
Percentage	Marker	Moderator	100
Signature	Marker	Moderator	

INSTRUCTIONS

1. Write your **NAME** and science teacher code (**Ab/Bn/Sk/Vh/La**) in the appropriate space on the Cover Page and all scripts handed in.
2. The question paper consists of 8 questions. Answer ALL the questions.
3. Start EACH question on a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Leave ONE line between two sub questions, for example between QUESTION 2.1 and QUESTION 2.2.
6. You may use a non-programmable calculator.
7. You may use appropriate mathematical instruments.
8. You are advised to use the attached DATA SHEET.
9. Show ALL formulae and substitutions in ALL calculations.
10. Round off your **final numerical answers** to a minimum of **TWO decimal places**.
11. Give brief motivations, discussions, et cetera where required.
12. Write neatly and legibly.

Answer Sheet

Name:_____ **Teacher Code: Ab/Vh/Oc/Sk**

Question 1

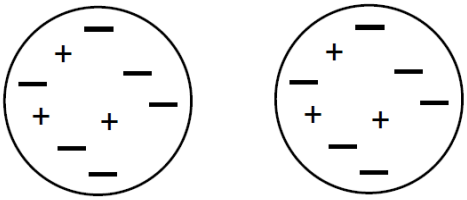
Make a **cross (X)** in the appropriate box next to the relevant question number (1.1 – 1.5)

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
		Total		**/10**

Question 1 Multiple choice questions

Four options are provided as possible answers to the following questions. Each question has only **ONE** correct answer. Choose the answer and only write the letter (**A-D**) next to the question number (**1.1-1.5**) in the answer sheet provided.

1.1 Study the two objects in the drawing below.



The two objects will ...

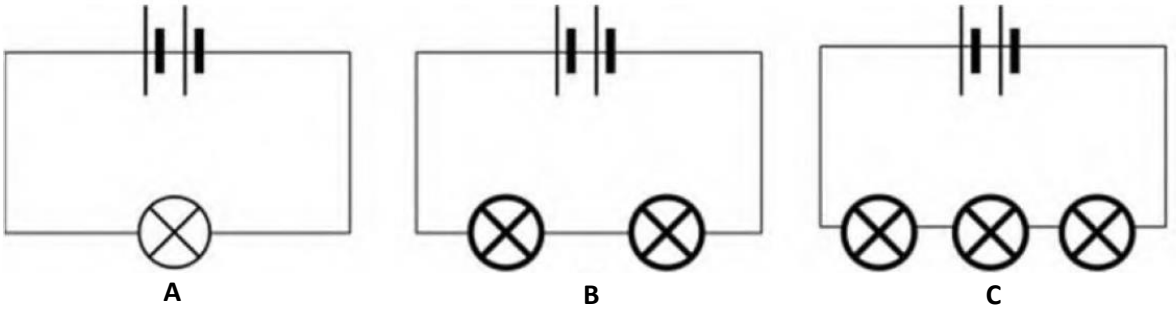
A attract each other because they carry like charges.

B attract each other because they carry unlike charges.

C repel each other because they carry unlike charges.

D repel each other because they carry like charges. (2)

1.2 Which statement regarding the circuits below is TRUE?



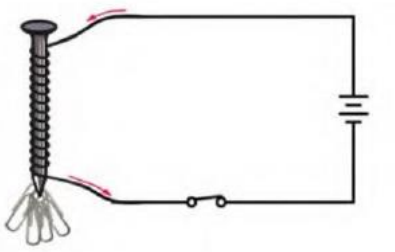
A The overall resistance in circuit C is less than in circuit A.

B If more bulbs are connected in series, the brightness of the bulbs increase.

C The bulb in circuit A is the brightest because the overall current is the largest.

D All the bulbs glow with the same brightness. (2)

1.3 A piece of conducting wire is wrapped around an iron nail and connected in a circuit as shown below. The nail attracts a few stainless-steel paper clips. What is the most likely explanation for this observation?



A The wire generates a magnetic field that magnetizes the iron nail, turning it into an electromagnet.

B The wire heats up and causes the iron nail to expand, which attracts the paper clips.

C The current in the wire causes a chemical reaction in the nail, creating static electricity that attracts the paper clips.

D The iron nail is naturally magnetic and attracts the paper clips without the need for an electrical current.

(2)

1.4 What best describes luminous object?

A Object reflects light.

B Object that emits its own light.

C Object that absorbs light.

D Object that bends light. (2)

1.5 Which characteristic of the glass would be best suited for **bathroom** windows?

A Translucent

B Transparent

C Clear

D Opaque (2)

[10]

Question 2: Terminology

Give the correct SCIENTIFIC TERM for each of the following descriptions. Write only the number and the answer.

2.1 What is the term used to describe the build-up of electric charge on the surface of an object (1)

2.2 An object that allows current to flow through it. (1)

2.3 A component that melts when there is too much current in the circuit. (1)

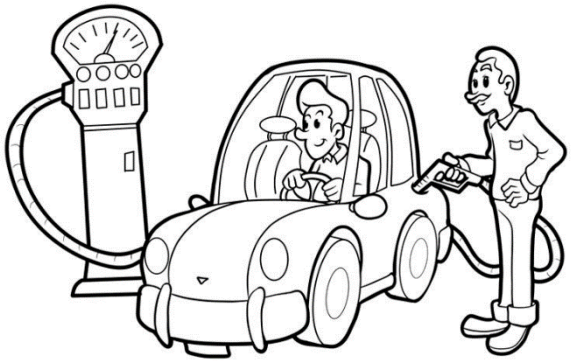
2.4 The number of waves that pass a point in one second. (1)

2.5 What term is used to describe the dark area formed when an object blocks the path of light? (1)

[5]

Question 3: Static electricity

Explosions have been known to occur at petrol stations when static electricity is discharged when a person handles the nozzle to put petrol in the car.



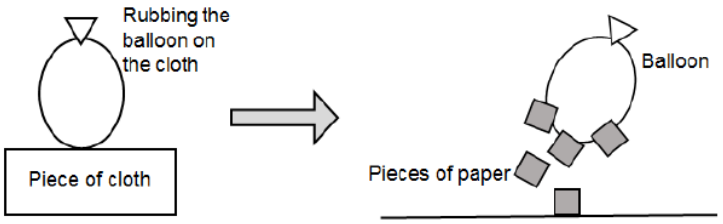
While the attendant walks up and down, rubbing takes place between the different parts of his clothes, which can cause a build-up of static electricity.

3.1 How does rubbing clothing cause a build-up of static electricity on the petrol attendant? (2)

3.2 Why might the petrol attendant get shocked when touching the metal nozzle of the pump? (2)

3.3 Would the attendant get shocked when touching a plastic or rubber object? Explain. (2)

3.4 Theto wonders which type of material is most suitable for making the work uniforms for petrol attendants. He investigates by rubbing four identical balloons, each with a different piece of cloth. The pieces of cloth are respectively made of cotton, polyester, nylon and silk. He then determines how many pieces of paper can be picked up by each of the charged balloons.



He then records his results in a table:

Type of material	**Number of pieces of paper picked up by the balloon**
Cotton	18
Polyester	13
Nylon	15
Silk	40

3.4.1 Identify the independent variable in this investigation. (1)

3.4.2 Identify the dependent variable in this investigation. (1)

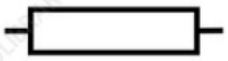
3.4.3 Draw a bar graph of the results recorded in the table above. (6)

3.4.4 From the results, which material is the best choice for making the uniforms of petrol attendants? Explain your choice. (3)

[17]

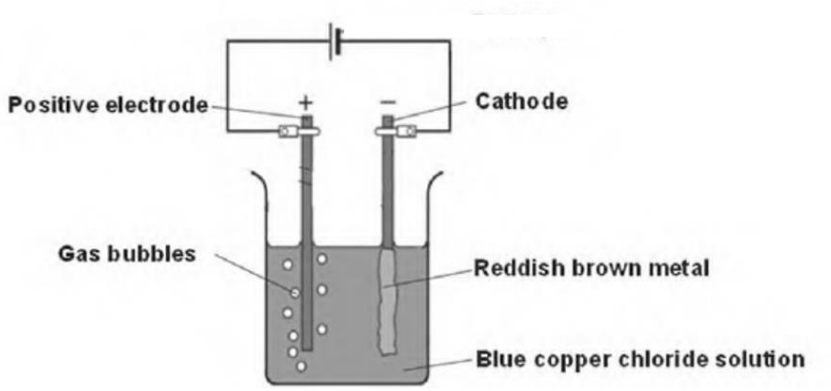
Question 4: Electric circuits

4.1 Complete the table below. Only write down the number (4.1.1 – 4.1.4) and the answer in your answer booklet

Name of component	Symbol	Function
4.1.1		**4.1.2**
Switch	**4.1.3**	Controls electrical flow by opening/closing circuits
Resistor		**4.1.4**

(4)

4.2 Study the diagram of an electrolytic cell containing a blue copper chloride solution.



4.2.1 Write down the correct term for the process that occurs when an electric current causes a chemical reaction. (1)

4.2.2 Provide the name for:

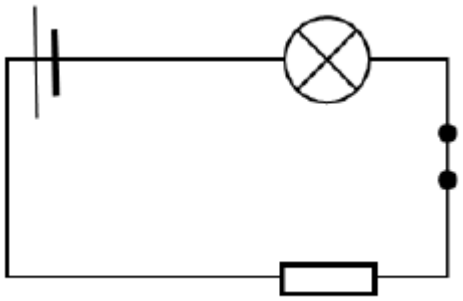
a) the positive electrode (1)

b) the gas bubbles (1)

4.2.3 Which observation proves that copper metal is one of the products that forms? (1)

4.2.4 Write down the energy-conversion that takes place in the electrolytic cell. (2)

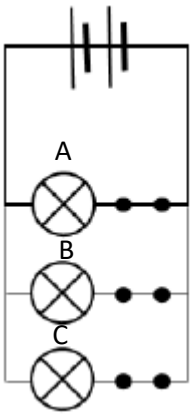
4.3 The following electric circuit is connected. All components are fully functional.



4.3.1 Describe how the brightness of the bulb will change when the resistor is removed. Provide a reason for your answer. (2)

4.3.2 Use all the components in the diagram above and design a circuit where the light bulb is burning all the time, but the resistor only heats up when the switch is closed. (2)

4.4 Study the circuit diagrams below. All cells and bulbs are identical.



4.4.1 What type of circuit connection is shown above? (1)

4.4.2 What would happen to the brightness of the bulbs if a fourth branch with a lightbulb was added. (1)

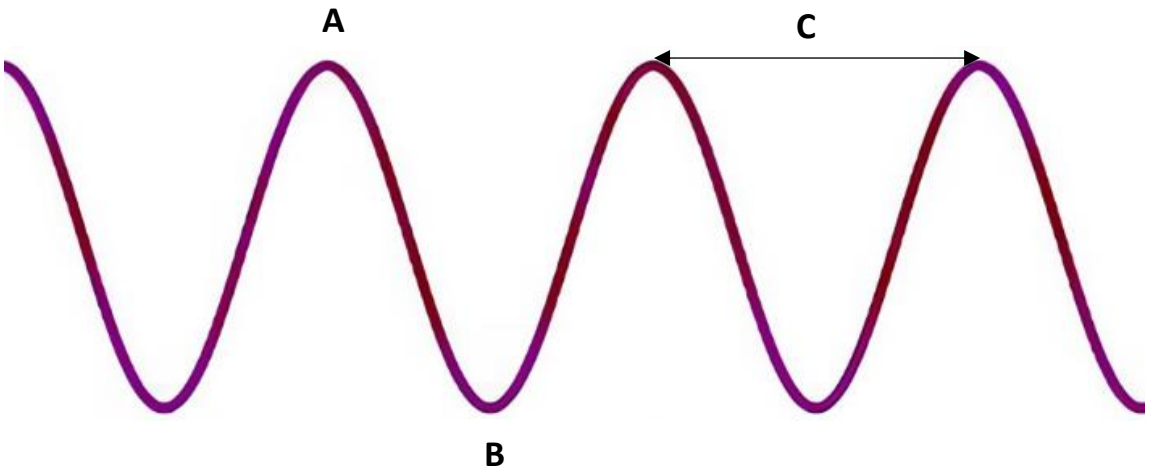
4.4.3 If light bulb B fuses, what happens to the rest of the bulbs? Provide a reason for your answer. (2)

4.4.4 What energy does electrical energy get converted into in a lightbulb? (2)

[20]

Question 5: Visible light

5.1 Provide the missing labels (**A, B** and **C**) on the drawing of the wave of light below:



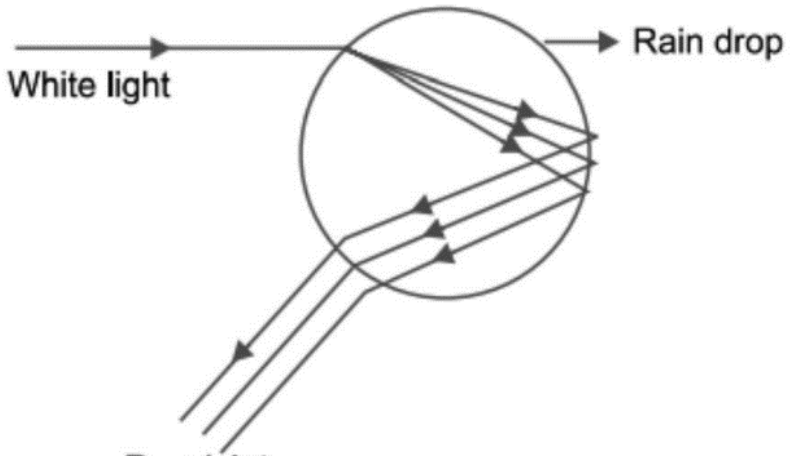
(3)

5.2 Arrange the following colours in the order of decreasing frequency:

Orange; Violet; Blue; Green (2)

5.3 Redraw the below diagram and indicate the following labels onto your diagram:

Dispersion, Refraction and Reflection



(3)

[8]

End of paper

Total: 60 marks