

GRADE 8

NATURAL SCIENCES

SEPTEMBER 2019

TIME: 1 HOUR

TOTAL: 50

This question paper consists of 8 pages.

INSTRUCTIONS

1. The paper consists of TWO SECTIONS:
SECTION A – One question (Question 1)
SECTION B – Three questions (Questions 2 to 6)
2. Answer ALL the questions.
3. Number all the answers in your answer book exactly as the questions are numbered in the question paper.
4. Write neatly and legibly.

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.10) in your ANSWER BOOK, for example 1.1.11 D.

1.1.1 A neutral object...

- A is repelled by a negatively or a positively charged object.
- B is attracted to positively charged objects only.
- C is attracted to negatively charged objects only.
- D is attracted by both negatively and positively charged objects. (1)

1.1.2 An electroscope is used to detect ...

- A electric current.
- B negatively charges only.
- C static electricity.
- D positive charges only. (1)

1.1.3 Lightning is a form of natural...

- A current flow.
- B electrostatic discharge.
- C movement of positive electrons.
- D conduction of protons through the air. (1)

1.1.4 Coulomb is the unit of

- A current
- B charge
- C resistance
- D potential difference (1)

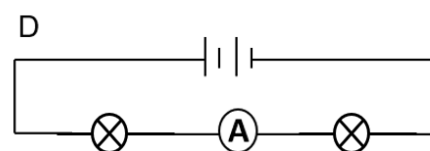
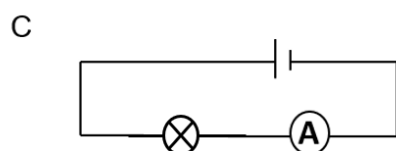
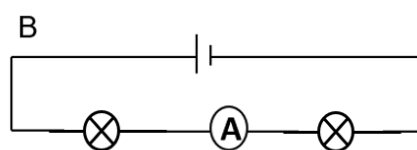
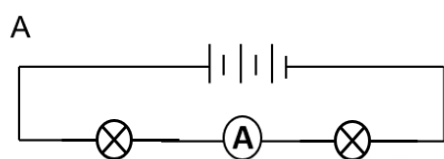
1.1.5 The diagram alongside shows ...

- A a series circuit
- B a parallel circuit
- C an incomplete circuit
- D an open circuit



(1)

1.1.6 In which one of the following circuit diagrams will the reading on the ammeter be the highest? (All the cells and bulbs in the respective circuit diagrams are identical.)



(1)

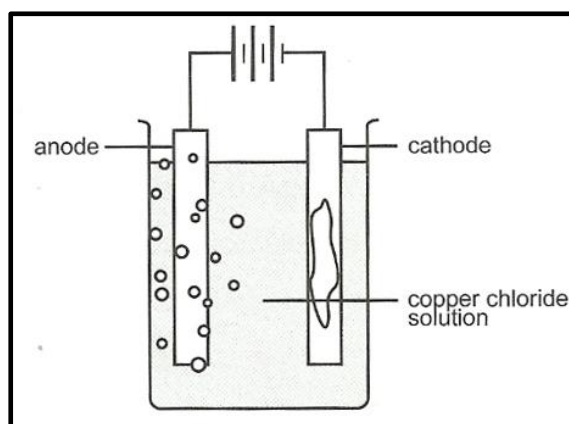
1.1.7 An electric current is the flow of...

- A charges through an insulator
- B protons in a conductor
- C electrons in an insulator
- D charges in a conductor

(1)

1.1.8 What is formed at the anode of the electrochemical cell in diagram?

- A Oxygen gas
- B Chlorine gas
- C Copper metal
- D Copper ions



(1)

1.1.9 Which statement regarding visible light is FALSE?

- A The sun emits all frequencies of light in the visible spectrum.
- B Red light cannot be reflected by red coloured objects.
- C Blue light has the lowest frequency of all colours of light in the Visible spectrum.
- D Light travels at 300 000 kilometres per second through an empty space(vacuum).

1.1.10 Which one of the following statement is FALSE?



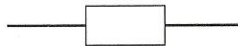
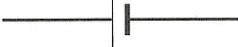




A fuse ...

- A is designed to protect electrical appliances.
- B melts if the current in the circuit is lower than what the fuse is designed to handle
- C is always connected in series with the components in an electric circuit which it must protect.
- D is made from a wire that has a relative low melting point.

(1)

[10]

1.2 Choose a symbol from COLUMN B that best matches the circuit component in COLUMN A. Write only the letter (A-H) next to the question number (1.2.1-1.2.5).

	COLUMN A		COLUMN B
1.2.1	Resistor	A	
1.2.2	Rheostat	B	
1.2.3	Light bulb	C	
1.2.4	Battery	D	
1.2.5	Closed switch	E	
		F	
		G	
		H	

[5]

TOTAL SECTION A:[15]

SECTION B

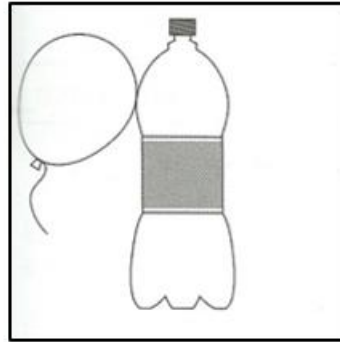
QUESTION 2

- 2.1 Diagram 1 below illustrates how a girl is able to charge a balloon **NEGATIVELY** by **RUBBING** the balloon against her hair.

Diagram 1



Diagram 2



- 2.1.1 The girl's hair is attracted to the charged balloon when the balloon is brought closer to her hair. Explain why there is a **FORCE** of **ATTRACTION** between the balloon and her hair? (2)
- 2.1.2 The charged balloon is also attracted and sticks to an electrostatic-neutral plastic bottle as shown in diagram 2.
- 2.1.2.1 By referring to sub-atomic particles, explain what is meant by the statement "The plastic bottle is electrostatic-neutral" (1)
- 2.1.2.2 Copy **DIAGRAM 2** into your answer book. Draw the applicable charges on the balloon and plastic bottle and explain how it is possible that a force of attraction can exist between the charged balloon and the **NEUTRAL** plastic bottle. (3)
- [6]**

QUESTION 3

- 3.1 An investigation was conducted to find out what the effect of an increase in the number of **BULBS** connected in **SERIES** is on the current in an electrical circuit.

This investigation was conducted with the purpose to test the following hypothesis

HYPOTHESIS:

"If the number of bulbs(resistors) connected in series INCREASES, then the total current in the circuit will also INCREASES."

Procedure:

One cell, a switch, an ammeter and one bulb were connected in series. The switch was closed and the ammeter reading was recorded. The experiment was then repeated, with two and then with three bulbs connected in series. The different ammeter readings were recorded in a table.

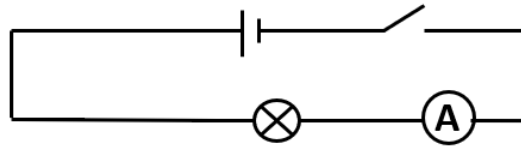


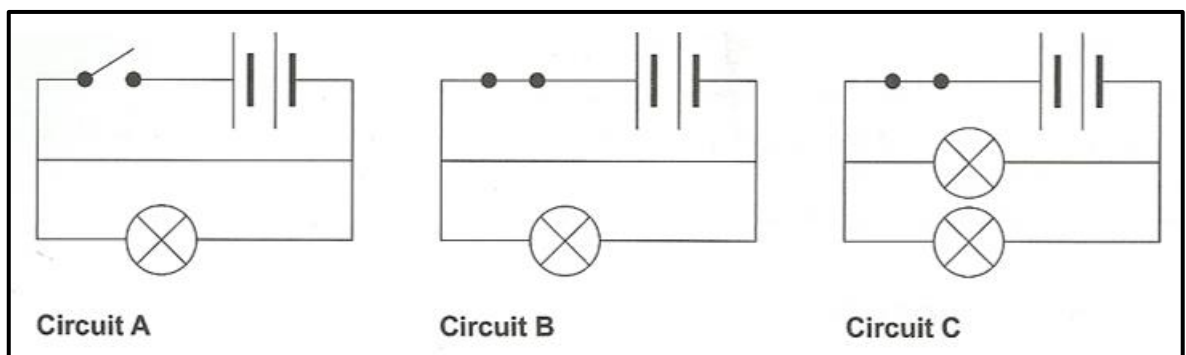
Table of Results:

Number of Bulbs connected in series	Ammeter reading (A)
1	0,3
2	0,2
3	0,1

- 3.1.1 Write down the INDEPENDENT variable of this investigation. (1)
- 3.1.2 Write down the DEPENDENT variable of this investigation. (1)
- 3.1.3 Do the results of the investigation confirm the stated hypothesis? Explain your answer. (Answer by first stating YES or NO and then explain your answer) (3)
- [5]**

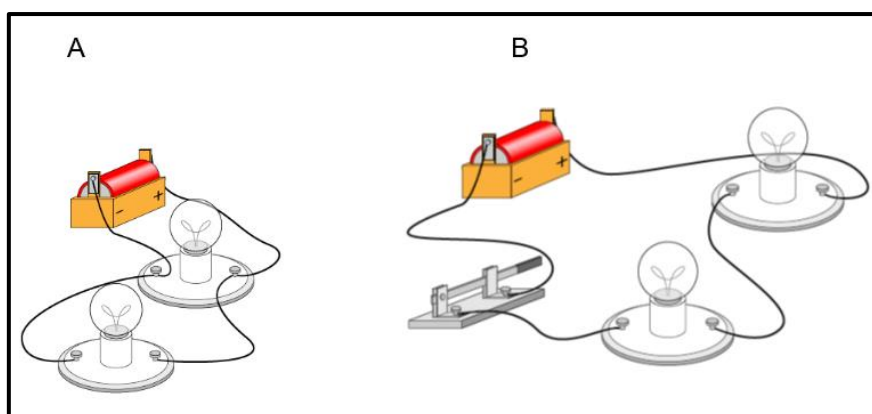
QUESTION 4

- 4.1 Consider Circuits A, B and C as shown in the diagram below and answer the questions that follow.



- 4.1.1 In which one of the circuits, if any, will the bulb(s) light up? (Write down Circuit A, B or C) (1)
- 4.1.2 In which one of these circuits will a short circuit occur? Explain your answer. (2)

- 4.2 The following picture diagrams, A and B represent two electrical circuits. Identical bulbs and cells were used in both circuits.



- 4.2.1 Use the information in the picture-diagrams and draw circuit diagrams for each of the circuits, A and B. (4)

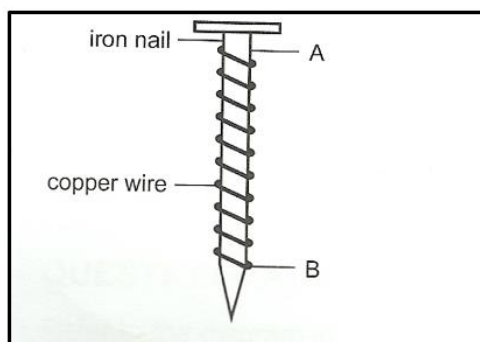
- 4.2.2 In which circuit will the bulbs glow the brightest? (1)

- 4.2.3 In your home, is it better to connect the light bulbs as in circuit A or as in circuit B? Give a reason for your answer. (2)

[10]

QUESTION 5

- 5.1 The diagram shows an iron nail with copper wire wound around it.



- 5.1.1 State what can be done to turn this nail with the copper wire winding around it, into a magnet. (1)

- 5.1.2 Name the type of magnet described above. (1)

- 5.1.3 State TWO advantages of the magnet in question 5.1.2 when compared to a permanent magnet. (2)

- 5.1.4 Describe two ways in which you could increase the strength of the magnet that was mentioned in question 5.1.2 (2)

- 5.1.5 Give an example of where this kind of magnet is used in the industry. (1)

[7]

QUESTION 6

- 6.1 Choose the correct word from the list that will complete each of the following sentences. You may only use each word once.

colours	dispersion	white	spectrum	reflection	wavelength
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- 6.1.1 Sunlight is a combination of different colours of light called the ... of visible light. (1)
- 6.1.2 White light undergo ... when it splits up into different colours of light. (1)
- 6.1.3 Each colour of light represents a unique ... of light. (1)
- 6.2 What colour will a green object appear when illuminated with the following colours of light:
- 6.2.1 blue light. (1)
- 6.2.2 red light (1)
- 6.2.3 White light. Explain your answer (2)

[7]

TOTAL SECTION B:[35]

GRAND TOTAL:[50]