Hillcrest High School

Grade 8 | Natural Sciences Examination | November 2016

R. Harmse | Time: 2Hrs

Marks: 120

INSTRUCTIONS:

1. **ALL ANSWERS** are to be written in the **SEPARATE ANSWER BOOKLET** provided.
2. **Write your NAME, GRADE AND TEACHERS NAME on your answer booklet**
3. If you make a mistake, cross it out and rewrite it neatly
4. All answers are to be in **blue** or **black** ink.

SECTION A

1. Read the questions below carefully. Choose the correct answer and write down only the number and the letter you choose i.e.

1.1. How can you tell when static electricity has been discharged?
- A Heat is released that can be felt
- B Light is released and you can feel a shock
- C Static electricity gives off many different colours
- D The object begins to spin rapidly when it is shocked.

1.2. When light bounces back off a surface, we say it has been:
- A Reflected
- B Absorbed
- C Transmitted
- D Refracted.

1.3. What is the Milky Way?
- A Galaxy
- B Star
- C Planet
- D Comet.

1.4. How far is the Sun from the centre of the Milky Way?
- A 2 light years
- B 10 light years
- C 2 000 light years
- D 26 000 light years.

1.5. Which form of electric discharge appears in nature?
- A rain
- B ocean currents
- C lightning
- D volcanoes

1.6. Who is credited with the discovery of the Milky Way?
- A Aristotle
- B Democritus
- C Plato
- D Socrates.

1.7. If two objects attract each other, what is NOT a possible explanation?

A They are equally charged
B One has a positive charge and the other has a negative charge
C They are both negatively charged
D They are both positively charged.

1.8. What is the effect of changing the wire in a circuit from a straight thick wire to a longer (coiled) thick wire?

A The lamps/bulbs become dimmer
B The lamps/bulbs become brighter
C The lamps/bulbs stay at the same level of brightness.
D The lamps/bulbs will not come on at all

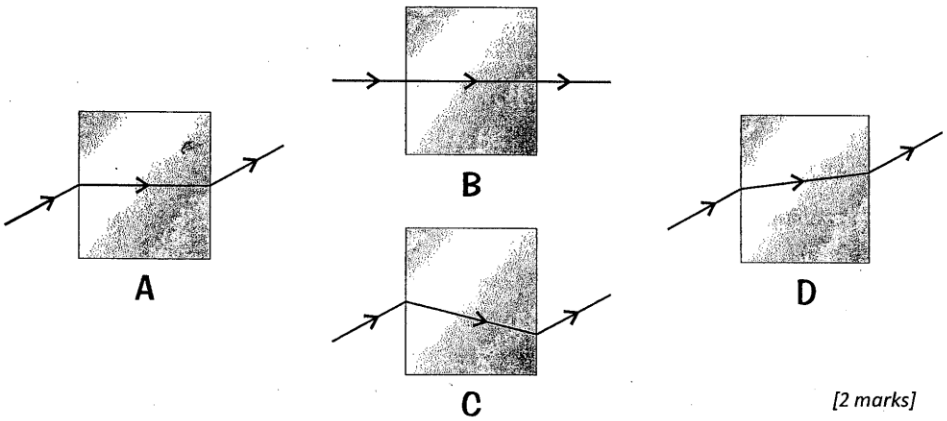
1.9. How are shadows formed?

A By light passing through an object
B By light being reflected from a shiny object
C By light being blocked by an opaque object
D By light being scattered in all directions.

1.10. What is the centre of the Milky Way called?

A Centre Point
B Galactic Centre
C Eye of the storm
D Planetary Centre. *[10 marks]*

2. Which two (2) of the diagrams below are correct?



[2 marks]

3. Read the paragraph below. Fill in the missing words. Write only the number and the word in your answer book :

There are nine (9) planets in the Solar System. The most massive planet is ____3.1____ and the least massive is ____3.2____ . The time taken for a planet to orbit the Sun ____3.3____ the further out you go, while the gravitational pull of the Sun ____3.4____ the further out you go. The inner planets, Mercury, Venus, Earth and Mars, are made mainly from ____3.5____ , while the rest, except Pluto, are made up mostly from ____3.6____ .

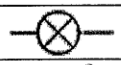
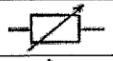
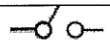
[6 marks]

4. Study the list of objects below. List those that could be seen on a clear night with the naked eye :

A Distant galaxies
B The Moon
C Artificial satellites
D Planets
E Stars
F Nebulae

[4 marks]

5. Give the correct word for each of the following electrical symbols. In your answer book, write the correct term beside each letter :

A	
B	
C	
D	
E	

[5 marks]

6. Fill in the missing words in the table below. Write only the number and answer in your answer booklet :

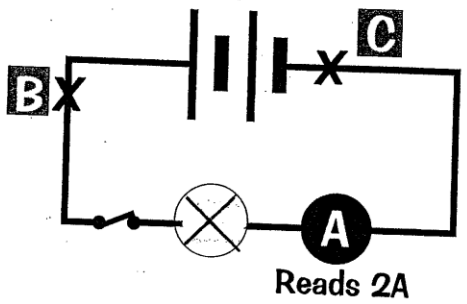
	Charge 1	Charge 2	Force Between
1	**Positive**	**Positive**	**6.1**
2	**Positive**	**Negative**	**Attract**
3	**Positive**	**Uncharged**	**6.2**
4	**Negative**	**Positive**	**6.3**

[3 marks]

TOTAL SECTION A = 30 MARKS

SECTION B

7. Study the diagram below and answer the questions that follow :



7.1 Name this type of circuit *[2 mark]*

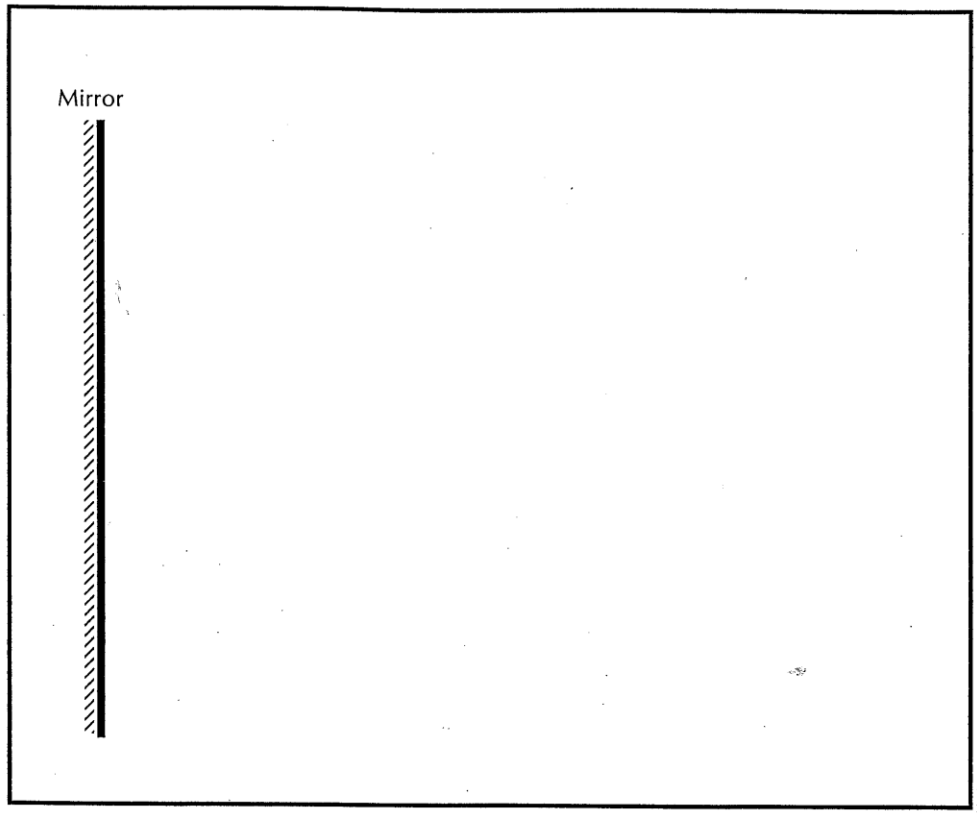
7.2 List all the components making up this circuit *[5 marks]*

7.3 If you added an ammeter at POINT B, what current would it read when the switch is closed? *[2 marks]*

7.4 If you added another bulb in series with the first light-bulb, how bright would each light-bulb appear compared to the first bulb on its own. Give a reason for your answer. *[2 marks]*

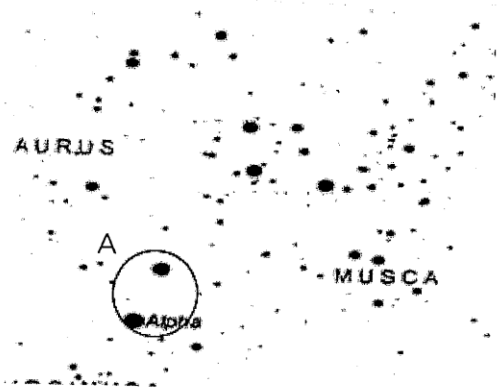
8. Redraw the diagram below. Label the diagram correctly using the following labels:

Incident ray; prism; screen; red light; violet light *[5 marks]*



9. Refer to the photograph and star map below and answer the questions that follow:

THE NIGHT SKY (PHOTOGRAPH)



THE NIGHT SKY (STAR MAP)

9.1 Explain what a constellation is. *[2 marks]*

9.2 Which constellation do these two figures have in common? *[2 mark]*

9.3 In which galaxy would we find the constellation in 9.2 above? *[1 mark]*

9.4 What is the shape of the galaxy in 9.3 above? *[1 mark]*

9.5 Look at **figure B** (the star map). Two stars have been circled at **A.** What are they called together? ***[2 marks]***

9.6 Why have they been given this name? *[2 mark]*

9.7 One of these stars in 9.6 above is called *Alpha Centauri.* Give one important fact about this star. ***[2 marks]***

10. The diagram below represents an OPTICAL OR REFRACTING TELESCOPE. Using the correct words for **C, D, E and F,** explain how the telescope works. ***[6 marks]***

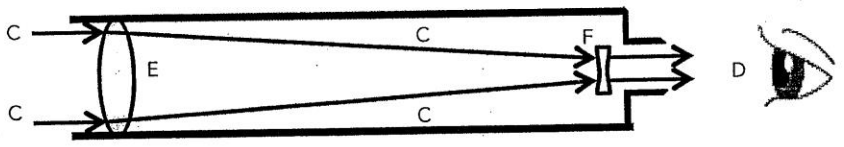


DIAGRAM OF OPTICAL OR REFRACTING TELESCOPE

11. Study the circuit diagrams below:

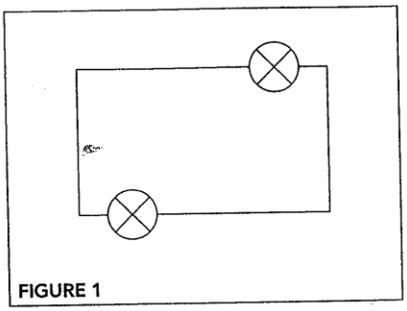


FIGURE 1

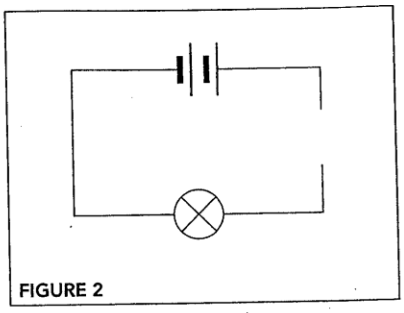


FIGURE 2

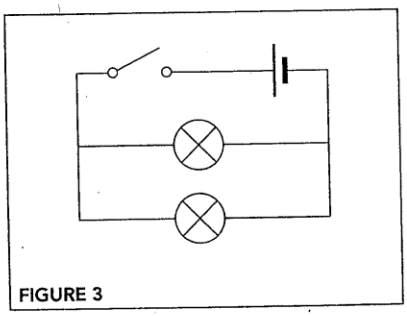


FIGURE 3

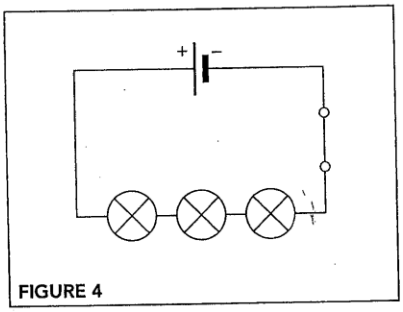


FIGURE 4

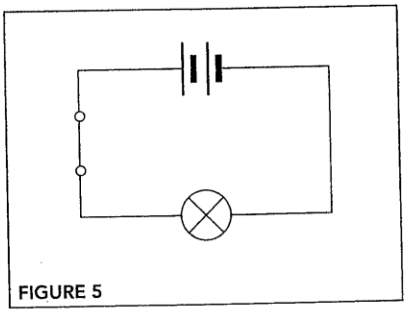


FIGURE 5

11.1 Draw a table and on the table state which circuits will work and in the second column give a reason for your answer. ***[7 marks]***

11.2 Explain fully how a fuse would be useful if placed into circuit ***figure 4.*** ***[3 marks]***

12. Study the table comparing the planets in the solar system below and answer the questions that follow:

. Table comparing the planets in the solar system

Planet	Size (km) (diameter)	Distance from the sun (10^6 km)	Orbital period (days)	Atmospheric composition	Number of moons	Average surface temperature (°C)
Mercury	4 879	57,9	88	none	0	–180 to 430
Venus	12 103	108,2	224,7	CO_2	0	465
Earth	12 756	149,6	365,2	N_2, O_2	1	–89 to 58
Mars	6 793	227,9	687	CO_2	2	–82 to 0
Jupiter	143 000	778,6	4,331	H_2, He	63	–150
Saturn	120 531	1433,5	10 747	H_2, He	62	–170
Uranus	51 113	2 872,5	30 589	H_2, He	27	–200
Neptune	49 532	4,495	59,8	H_2, He	13	–210

12.1 Draw a bar graph showing the orbital period (in days) of the eight planets. *[7 marks]*

12.2 Which planet :

a) Is closest to the sun
b) Has the largest diameter
c) Is the quickest to orbit the sun
d) Is the coldest
e) Has 27 moons *[5 marks]*

13. The following sentences have different options as answers. Choose the correct answer/ answers and ***write down only the letter and the answer*** :

Complete the sentences by circling the correct word:

a) Materials that you can charge up by rubbing are types of *conductor* / *insulator*.

b) Rubbing causes *friction* / *smoothness* between a duster and a polythene rod.

c) There are *two* / *three* types of charge.

d) The names of the different types of charge are *positive* / *neutral* and *negative* / *neutral*.

e) Positively charged objects will attract *negatively* / *positively* charged objects.

[7 marks]

14. **<u>This question must be answered in your answer booklet.</u>**

Complete these sentences by filling in the missing words.

a) Light travels in _____ lines.

b) Light travels as a type of electromagnetic _____.

c) Light travels at a speed that is much _____ than that of sound.

d) The speed of light in a vacuum is _____ m/s.

e) Some things can be seen through. These are said to be _____.

f) Some things just don't let light through at all. These are called _____ materials.

g) Some things give out their own light. These are said to be _____.

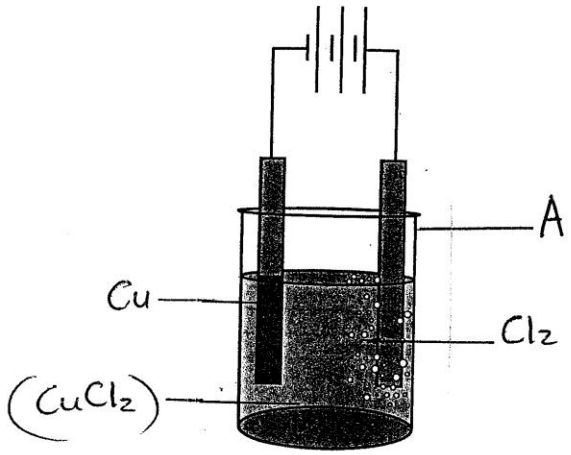
h) All other things we see because they _____ light.

i) For us to see something, light from it must enter our _____.

j) Areas where light can't reach because something is in the way are called _____.

[10 marks]

15. Electricity can be used to break down compounds. You carried out the following experiment to demonstrate this process. Study the diagram below and answer all the questions



15.1 Give the correct term for this process.

15.2 Name the compound used.

15.3 Which element formed at the positive rod?

15.4 What evidence did you have to prove your answer in 15.3 above?

15.5 Name the part which will be called the ***electrolyte.***

15.6 Name the piece of equipment labelled A

15.7 State a hypothesis for this experiment.

15.8 Give a conclusion for this experiment.

15.9 Name the other element which was formed as a result of this process. *[12 marks]*

16. Light passes through the human eye all the time. As the light passes through the eye, it travels through a series of layers. Explain in a paragraph how the process of forming an image on the back of the eye comes about. You need to use the correct biological terms in your description.

[5 marks]

TOTAL SECTIONB=90 MARKS