Hillcrest High School

Grade 8 | Natural Sciences Examination | June 2017

R Harmse | Time: 2Hrs

Marks: 120

INSTRUCTIONS:

1. **ALL ANSWERS** are to be written in the **SEPARATE ANSWER BOOKLET** provided.
2. **Write your name and your teachers name on 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	SECTION B	TOTAL
60	60	120

SECTION A

1. Choose the most correct answer. ***Write down the number of the question and the letter you choose only. E.g. 1. A***

1.1 The organelle in which green pigment is found in a leaf is called

A. Stroma
B. Chloroplast
C. Chlorophyll
D. Starch

1.2 Examples of Pathogenic Micro-organisms

A. Bacteria only
B. Viruses only
C. Fungi
D. All of the above

1.3 An element

A. Is the same as a compound
B. Cannot be found on the Periodic Table
C. Is an impure substance formed by a chemical reaction
D. Is a pure substance made up of one type of atom

1.4 A Hypothesis

A. Is a question
B. Is an educated guess at the outcome of an investigation
C. Sums up the final outcome
D. Is always correct.

1.5 Protons are

A. Negatively charged particles
B. Neutral particles
C. Found in the nucleus
D. Are positively charged particles

1.6 The elements on the Periodic Table were arranged by:

A. Antoine Lavoisier
B. Democritus
C. James Chadwick
D. Dmitri Mendeleev

1.7 The biosphere is

A. An individual ecosystem only
B. All abiotic factors on earth
C. Made up of the lithosphere, hydrosphere and atmosphere
D. All the water biomes on earth only

1.8 The following variable is not under the control of the experimenter

A. Independent
B. Constant
C. Dependent
D. None of the above

1.9 When a liquid is turned into a gas it is known as :

A. Condensation
B. Evaporation
C. Sublimation
D. Freezing

1.10 All bacteria are

A. Unicellular
B. Harmful
C. Multicellular
D. Useful

[10x2=20]

2. Choose the correct term in ***column B to match the the statement in column A***. You need to write only the number and the letter you choose next to the margin**. Eg. 1.F**

Column A	**Column B**
2.1 A group of individuals of the same species living in the same ecosystem	A. Photosynthesis
2.2 Organisms that are able to make their own food	B. Abiotic
2.3 Different populations that interact in the same ecosystem	C. Carnivores
2.4 Fine branching threads that make up the most of fungi	D. Community
2.5 The non-living aspects of an ecosystem	E. Predator
2.6 Dead organisms and waste matter in an ecosystem	F. Producers
2.7 Carnivore that hunts other animal	G. Hyphae
2.8 The process whereby some organisms make their own food	H. Pollutants
2.9 Chemicals or waste that contaminate the water, air or soil.	I. Population
2.10 Animals that eat only other animal matter	J. Decomposition **[10]**

3. Study the equation below and answer all the questions based on this equation.

glucose + oxygen → energy + carbon dioxide + water

3.1 Which life process is represented by this equation? (2)

3.2 Name the substances that are the reactants (2)

3.3 Name another life process that uses the carbon dioxide from this reaction (1)

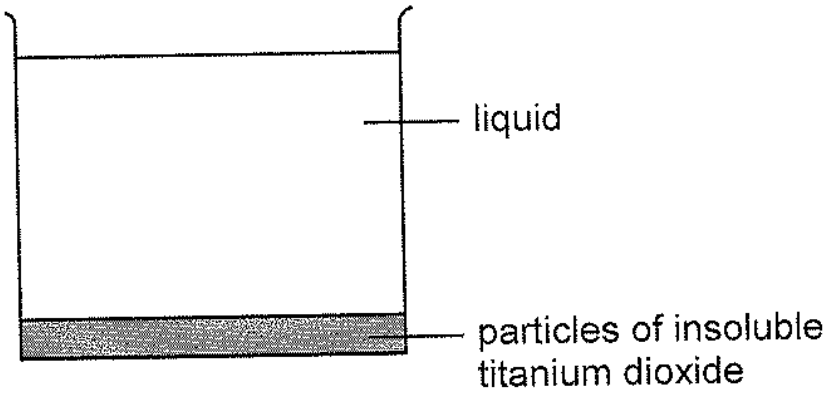
3.4 Give the term used for stored energy (1)

3.5 What is the importance of the process shown in the equation above? (2)

3.6 Describe a test that you can carry out to show that this process has taken place (2)

[10]

4. Samantha opened a tin of white paint. The paint consisted of liquid and particles of titanium dioxide that are insoluble in the liquid.



The paint had separated into two layers, as shown below.

4.1 What type of substance is the paint? (Compound / Element or Mixture) (1)

4.2 What would you say that titanium dioxide is in terms of the above? (1)

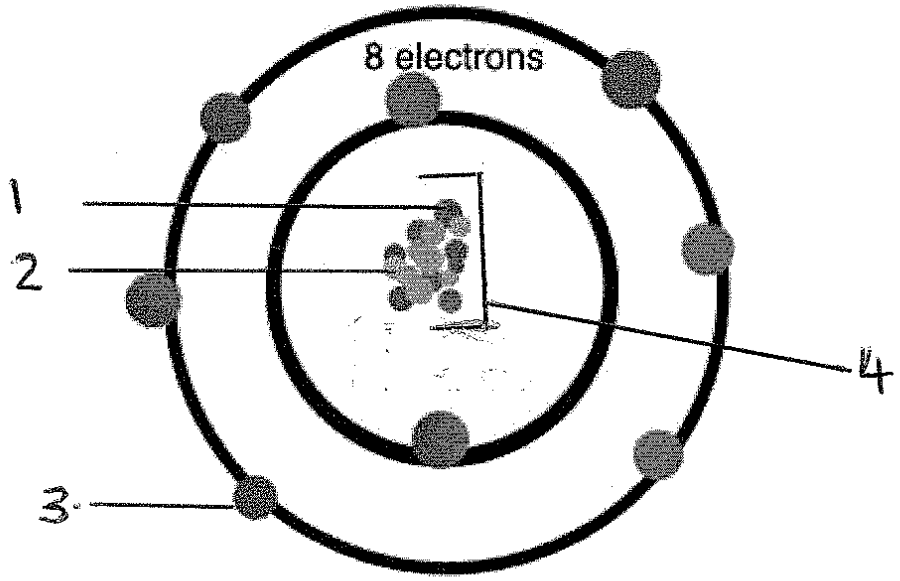
4.3 Name all the individual elements found in the above diagram. (2)

4.4 Draw a model representing one molecule if titanium oxide (4)

4.5 Explain what would happen to the paint if you mix it thoroughly and then leave it for a week (2)

[10]

5. Study the diagram below and answer the questions that follow.



5.1 Provide labels for numbers **1 to 4** (4)

5.2 How many electrons are there in this atom? (1)

5.3 If the mass number for this atom is 16 calculate the number of neutrons it will have (2)

5.4 What charge does an electron carry? (1)

5.4 Use the attached Periodic table to identify this atom (2)

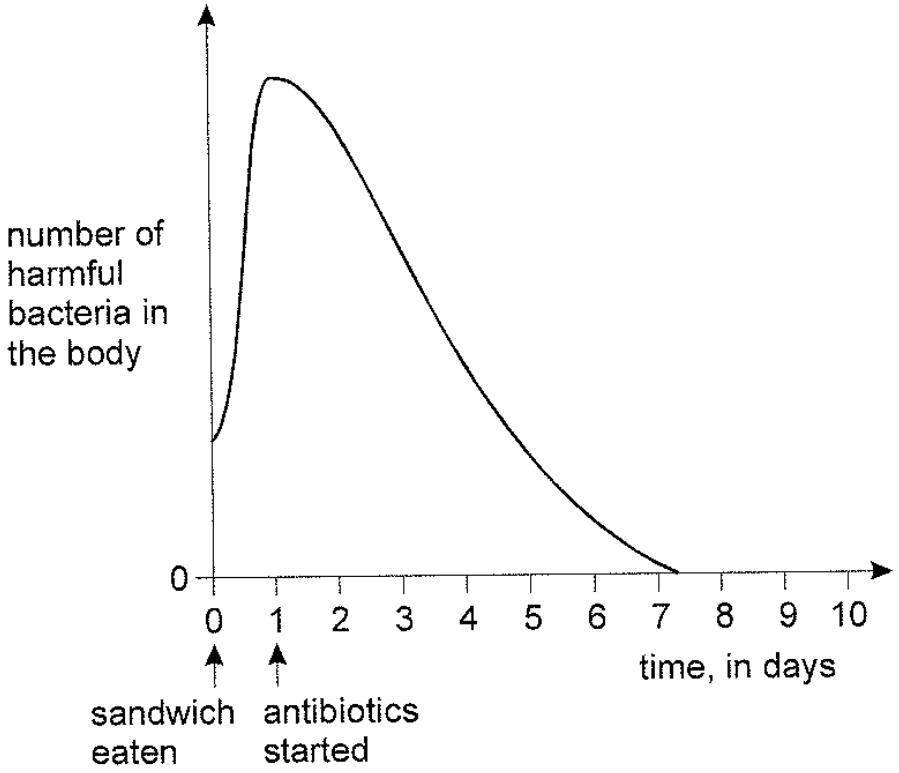
[10]

SECTION A = 60 MARKS

SECTION B

6. One evening Jenny and Leah ate chicken sandwiches which had been in their school bags all day. There were harmful bacteria in the food. The next day both girls became very ill. Their doctor gave them antibiotics to take for eight days.

The graph represents how antibiotics affect the number of bacteria in the body.



6.1 On which day did the girls become ill? (1)

6.2 Explain why they did not become ill on the day when they ate the sandwich? (1)

6.3 Name the independent variable. (1)

6.4 Which aspect would be the dependent? (1)

6.5 Explain how the antibiotics worked by day 7 by looking at the graph. (2)

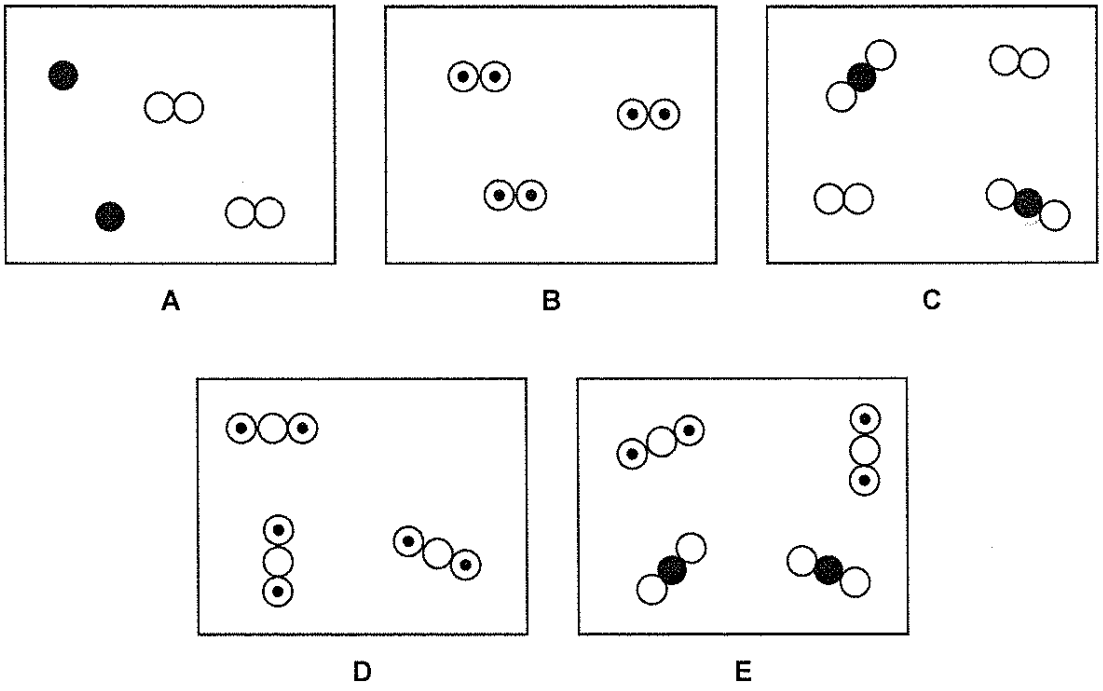
6.6 Leah should have taken the antibiotics for eight days. She felt much better after five days and stopped taking the antibiotics. Two days later she felt very ill again.

Redraw the graph to show what happened to Leah after five day 5. (4)

[10]

7. Study the diagrams below and answer the questions that follow.

The diagrams below show different combinations of these atoms.



7.1 Give the letter of the diagrams which show pure substances. (2)

7.2 Give the letter of the diagram which shows a mixture of an element and a compound. (1)

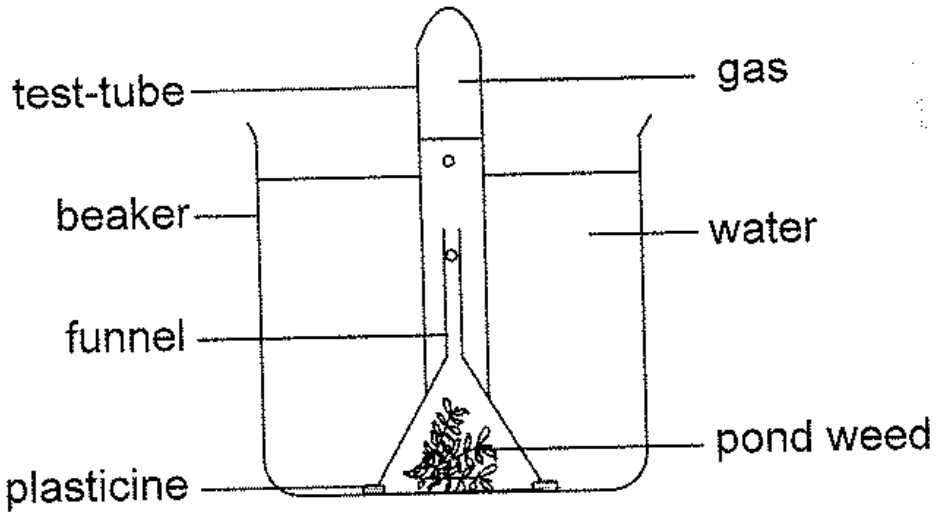
7.3 Give the letter of the diagram which shows a mixture of **two** compounds. (1)

7.4 Draw a diagram of any of the above molecules that could represent water. (2)

7.5 Use the key at the top of the question. Choose the black atom and the white atom to show the process of diffusion in a diagram. Your diagram must be fully labelled (4)

[10]

8. The drawing shows an experiment to investigate photosynthesis in weed from a pond.

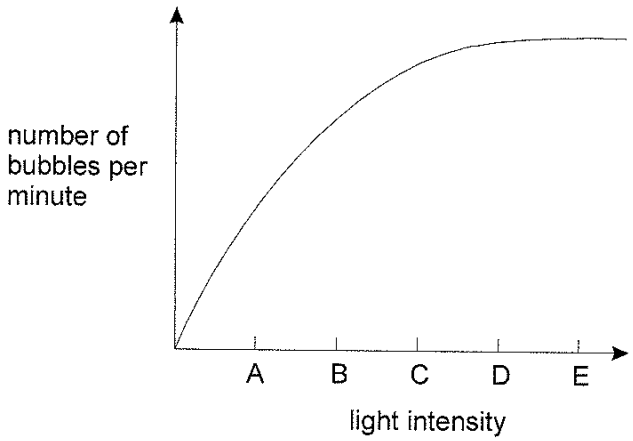


Bubbles of gas produced during photosynthesis were given off from the pond weed and collected in the test tube.

8.1 Name the gas given off in photosynthesis. (1)

8.2 What two substances are taken in by the plant and used for photosynthesis (2)

8.3 Light of different intensities was shone onto the pond weed. The number of gas bubbles given off in one minute at each light intensity was counted. The results are shown in the graph.



Which letter on the horizontal axis shows the light intensity at which the rate of photosynthesis first reaches its maximum? (1)

8.4 Blue, Green and red light were shone, in turn, onto the pond weed. The number of bubbles of the gas given off in one minute was counted. The results are shown in the table.

colour of light	number of bubbles in one minute
blue	85
green	10
red	68

The leaves of the pond weed contain green pigment which absorbs light for photosynthesis.

i) Name this pigment. (1)

ii) Using the information in the table, tick a box by one colour of light which is strongly absorbed by the pigment. (1)

[6]

9 The list below shows properties that different elements can have.

- Magnetic
- Can be compressed
- Very high melting point
- Very low melting point
- Good conductor of heat
- Poor conductor of heat
- Good conductor of electricity
- Poor conductor of electricity

9.1 Which two properties from the list above make aluminium suitable for cooking (2)

9.2 Which property in the list above explains why: copper is used in the cable of a television? (1)

9.3 Give one property from the list of a non-metal (1)

[4]

10. In a dam, snails are eaten by the carp that are eaten by bass. There are bulrushes and water lilies growing in the dam, on which the snails and worms feed. The worms are eaten by the carp and there are leeches that eat the snails.

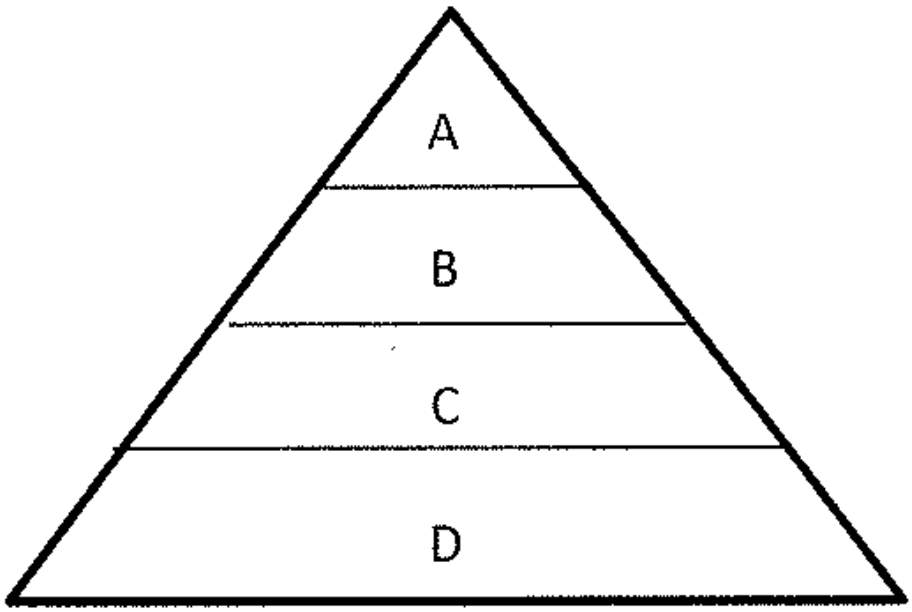
10.1 using information, draw up a food web to include all seven organisms. (4)

10.2 Underline the producer/s. (2)

10.3 Which type of consumer will gain most of the energy? (1)

10.4 What does the arrow in the food web indicate? (2)

11 The accompanying diagram represents an ecological pyramid of a certain chain in nature.



11.1 Which letter represents the producer? (1)

11.2 What are the functions of the producers in the food chain? (2)

11.3 What type of consumer is represented by C? (1)

11.4 Which two letters represent carnivores? (2)

11.5 If B represents snakes, which one will represent secretary birds? (1)

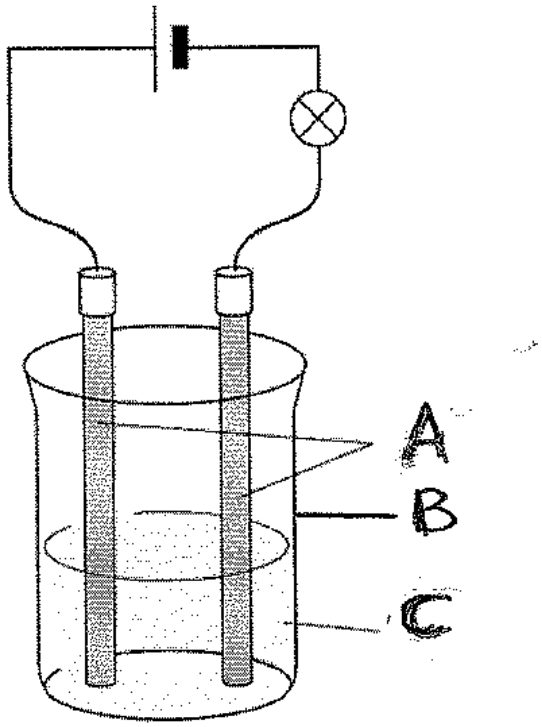
11.6 What would happen in a food chain to …

a) A and (1)
b) C if all the members of B were removed? (1)

11.7 Which organism is not represented in the diagram? (2)

[20]

12 Study the diagram below and answer the questions that follow.



12.1 label the following:

A, B and C (3)

12.2 Describe the aim of this experiment. (1)

12.3 Give the name of the products/ elements that form during this process. (2)

12.4 Name this process (1)

12.5 Was one of the products a gas?

Give reason for your answer. (2)

12.6 Give one use for this process in industry. (1)

[10]

SECTION B = 60

TOTAL = 120