2014 BECE – INTEGRATED SCIENCE [PAPER 2]

INTEGRATED SCIENCE 2

ESSAY

1 ¼ hours

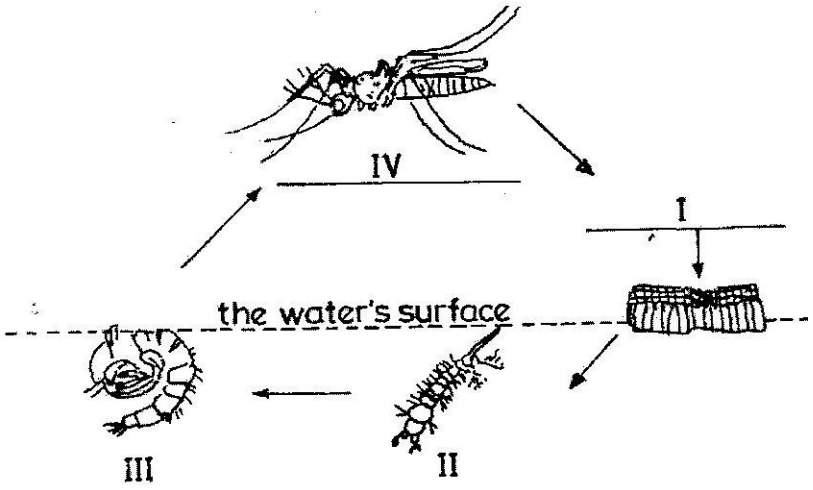
PART I

[40 marks]

Answer all of Question 1

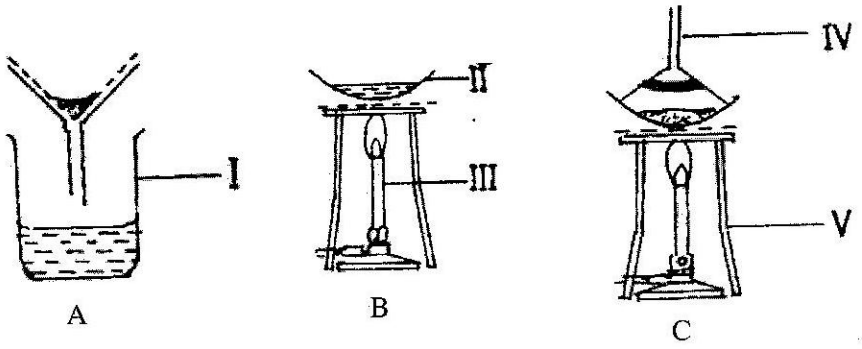
1. (a) The diagrams below represent the stages in the life cycle of a mosquito

Study the diagrams carefully and answer the questions that follow



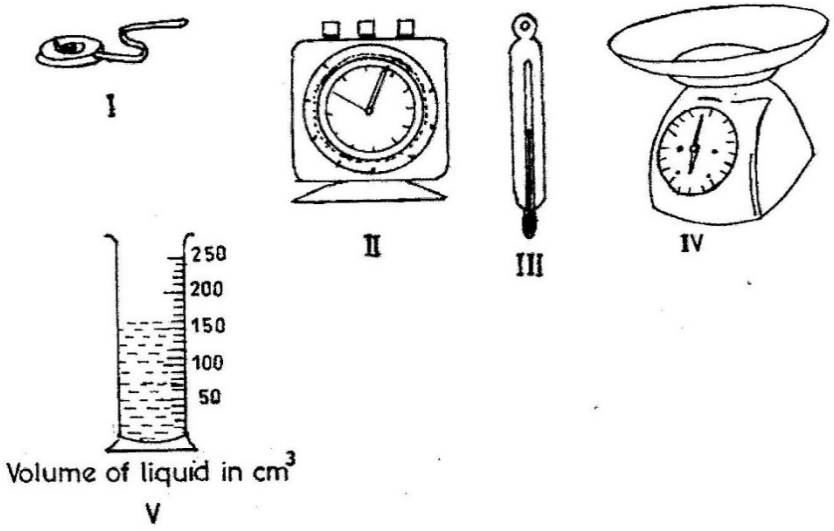
(i) Name **each** of the stages labeled **I, II, III** and **IV**
(ii) State how stage **II** obtains oxygen
(iii) State **two** methods of controlling **each** of the stages labeled **III** and **IV**

(b) The diagrams below are different laboratory set-ups used in the separation of mixtures. *Study the diagrams carefully and answer the questions that follow*



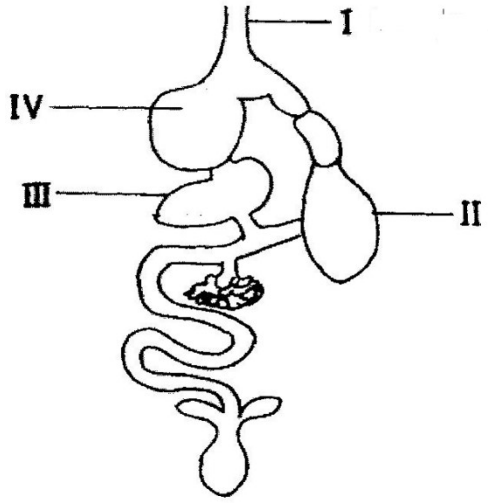
(i) Name **each** of the parts labeled **I, II, III, IV** and **V**.
(ii) Name the separation method represented by **each** diagram.
(iii) Which of the set-ups is used to obtain clear water from muddy water?
(iv) Which of the set-ups is used to obtain salt from salt solution?

(c) The diagrams below show some instruments used in the laboratory.
Study the diagrams carefully and answer the questions that follow



(i) Identify **each** of the instruments labeled **I, II, III, IV** and **V**
(ii) State **one** use of **each** of the instruments labeled **I, II, III** and **IV**
(iii) Read and record the volume of the liquid in the instrument labeled **V**

(d) The diagram below shows the digestive system of a class of farm animals.
Study the diagrams carefully and answer the questions that follow



(i) Name **each** of the parts labeled **I, II, III** and **IV**
(ii) State **one** function **each** of the parts labeled **II** and **IV**
(iii) Name **two** farm animals that possess this type of digestive system.
(iv) Mention **two** diseases which affect this class of farm animals.

[10 marks]

PART II

[60 marks]

Answer **four** questions only from this part.

2. (a) (i) Name the **two** elements that combine to form water.
(ii) Write a balanced chemical equation to show how the water is formed from the named elements

(b) State **two** ways of maintaining a balance in an ecosystem.

(c) (i) What is a *fertile soil*?
(ii) State **two** factors that cause loss of soil fertility.

(d) Classify the following items as *magnetic* or *non-magnetic* substance:
wood, steel blade, rubber and glass jar.

3. (a) (i) What is *germination of seed*?
(ii) State **two** conditions necessary for the germination of seed.

(b) State **four** methods used in identifying farm animals

(c) Explain why it is easier to cut a piece of yam with a sharp knife than with a blunt knife

(d) State **three** differences between a *metal* and a *non-metal*.

4. (a) (i) What is *debeaking*?
(ii) Give two reasons why debeaking in poultry birds is important.

(b) (i) A steel needle carefully placed on the surface of water floats. What type of force made the steel needle to float?
(ii) Name **three** substances that could be added to the water to make the steel needle to sink.

(c) (i) Explain why gold is preferred to iron in the making of jewelleries.
(ii) State **one** way of preventing rusting.

(d) (i) State **two** elements of climate
(ii) Name the equipment used to measure **each** of the elements stated in (i) above.

5. (a) (i) What is *refraction of light*?

(ii) Sketch a diagram to show the path of a light ray when it travels from air to glass.

(b) Explain why it is difficult to separate iron and sulphur mixture after strong heating.

(c) (i) Give **two** example of digestive enzymes produced in humans.

(ii) For **each** of the enzymes given in (i), name the part of the human body where the enzyme is produced.

(d) List **four** methods of applying fertilizers to crops.

6. (a) Consider the substance listed below:

carbon dioxide, gold, bronze, iron, oxygen and ink

From the list, select the substance that:

(i) supports burning

(ii) is used as jewellery;

(iii) is used for making statues

(b) (i) Name **two** diseases associated with the circulatory system of humans.

(ii) State **one** way of preventing **each** of the diseases named in (i)

(c) Give two examples of **each** of:

(i) **major** plant nutrients;

(ii) **minor** plant nutrients.

(d) (i) State **two** properties of a good thermometric liquid.

(ii) Give **two** examples of a good thermometric liquid.

END OF ESSAY TEST