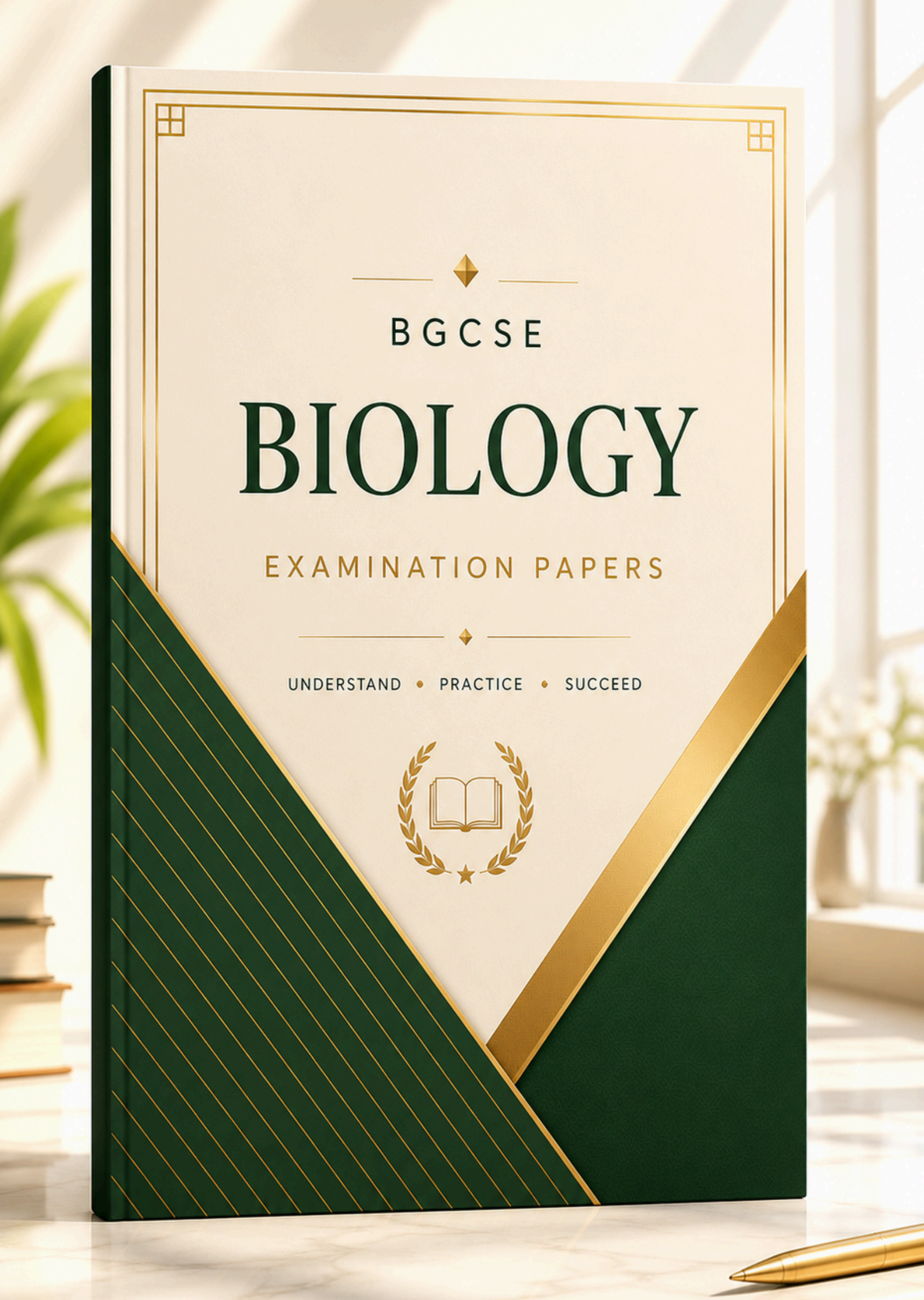
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3009/2 **BGCSE**

School Number	Candidate Number

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BIOLOGY

PAPER 2 3009/2

Friday 15 MAY 2020 10:30A.M.–12 NOON

MINISTRY OF EDUCATION
NATIONAL EXAMINATIONS

BAHAMAS GENERAL CERTIFICATE OF SECONDARY EDUCATION

INSTRUCTIONS AND INFORMATION FOR CANDIDATES

Do not open this booklet until you are told to do so.

Write your school number, candidate number, surname and initials in the spaces provided above.

Answer **ALL** questions on this paper. Read each question carefully and make sure you know what you have been asked to do before starting your answer.

Confine your answer to the lines following each question. The mark for each part-question is given in brackets [ ].

For Examiner's Use	
1	
2	
3	
4	
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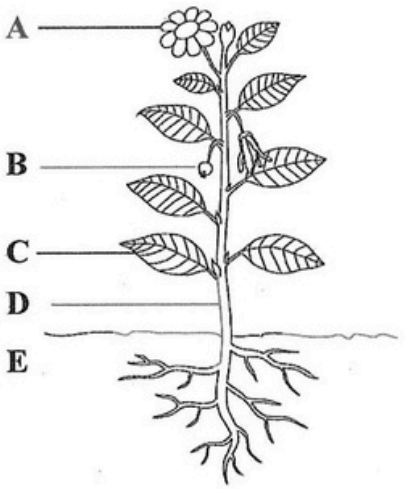
6	
7	
8	
TOTAL	

This question paper consists of 15 printed pages and 1 blank page.

1. The diagram shows a flowering plant.



(a) State the letter of the structure of the plant responsible for each of the following:

(i) photosynthesis _____

(ii) sexual reproduction _____ [2]

(b) In which labelled structure would you find the following?

(i) palisade cell _____

(ii) seeds _____

(iii) pollen grains _____ [3]

(c) (i) State the group of flowering plants to which this plant belongs.

_____ [1]

(iii) Give **ONE** reason for your choice in part (c)(i).

_____

_____ [1]

(d) (i) What term is used to describe a growth response to a stimulus in plants?

_____ [1]

(ii) State the response shown by part **E** to gravity.

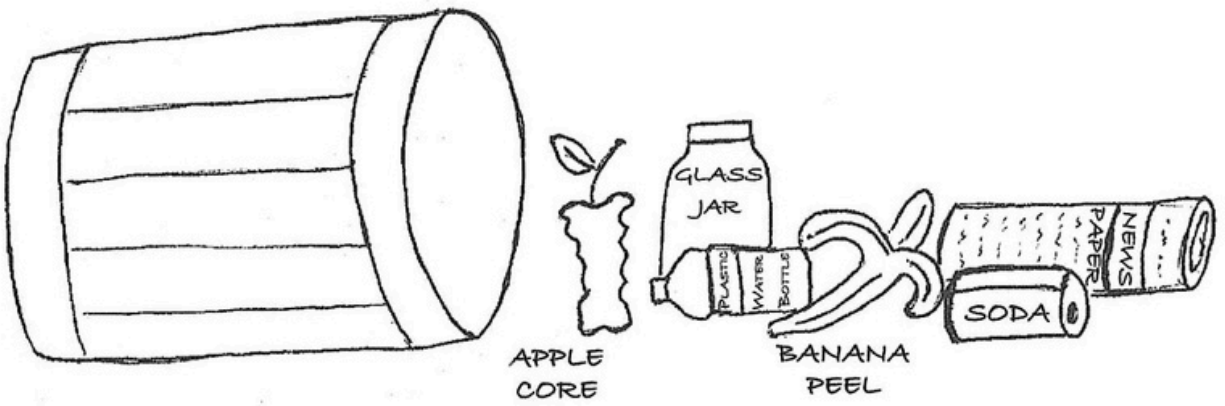
_____ [1]

(iii) Name the hormone involved in this response.

_____ [1]

TOTAL MARKS [10]

2. Improper disposal of garbage on land can lead to land pollution.



(a) Define the term pollutant.

_____

_____ [1]

(b) The majority of the pollutants shown in the overflowing garbage bin can be classified as biodegradable or non-biodegradable.

(i) State the meaning of biodegradable.

_____

_____ [1]

(ii) Name **ONE** example of a biodegradable pollutant shown in the diagram.

_____ [1]

(iii) Name **ONE** example of a non-biodegradable pollutant shown in the diagram which can be recycled.

_____ [1]

(c) State **TWO** reasons why it is important to recycle materials.

1. _____

_____

2. _____

_____ [2]

(d) Many landfill sites are associated with air pollution.

Name **TWO** harmful gases produced at landfill sites and for each gas state **ONE** main effect it has on the environment.

name _____

effect _____

_____

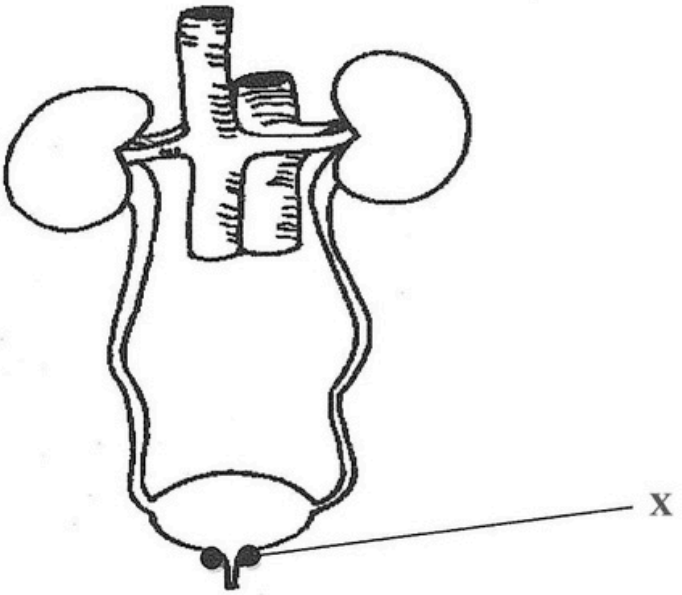
name _____

effect _____

_____ [4]

TOTAL MARKS [10]

3. The diagram shows the human urinary system .



The kidneys are part of the urinary system.

(a) State **TWO** functions of the kidneys.

1. _____

2. _____ [2]

(b) On the diagram, draw lines to the following structures and name them.

(i) bladder

(ii) ureter [2]

(c) State the function of the structure labelled **X**.

_____

_____ [1]

(d) Persons whose kidneys fail often receive treatment which removes waste materials from their blood.

(i) What is the name given to this treatment?

_____ [1]

(ii) Name **TWO** substances which are removed from a patient's blood during this treatment.

1. _____

2. _____ [2]

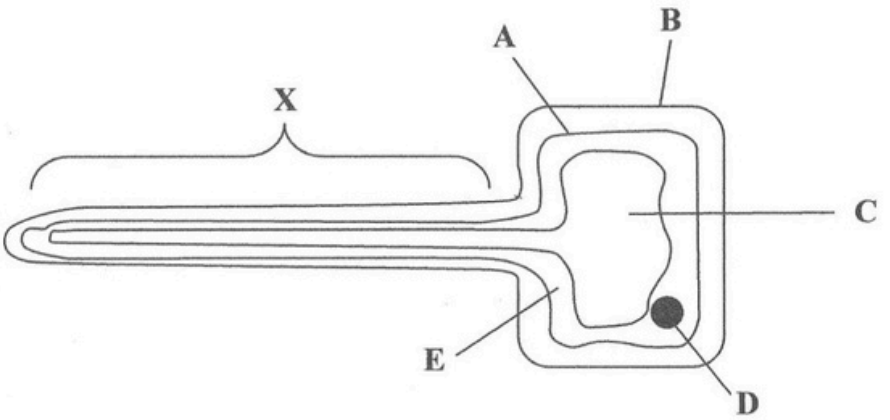
(e) The urinary system is one system in the human body. Name **TWO** other systems.

1. _____

2. _____ [2]

TOTAL MARKS [10]

4. The diagram shows a specialised cell found in a plant.



(a) State the name and function of the cell shown in the diagram.

name _____

function _____

_____ [2]

(b) Complete the table by selecting the letter, **A–E,** that matches the description.

description	letter
contains the genetic material which controls the cell's activities	
controls what enters and leaves the cell	
storage site for water and minerals	

[3]

(c) Describe how structure **X** aids the cell in carrying out its function.

_____

_____

_____ [2]

(d) Water enters this cell by osmosis. Define osmosis.

_____

_____

_____ [2]

(e) The plant cell in the diagram is a eukaryotic cell. Bacteria are prokaryotic.

State **ONE** difference between an eukaryotic cell and a prokaryotic cell.

_____

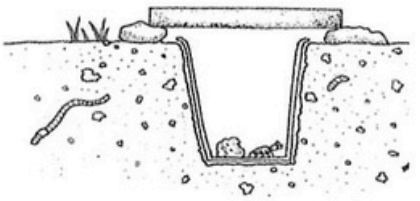
_____

_____ [1]

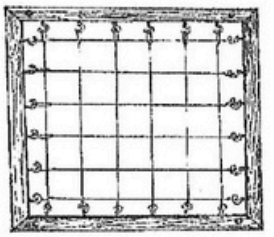
TOTAL MARKS [10]

5. The diagrams represent various apparatus and equipment used in ecological field studies.

P



Q



R

(a) Complete the table by giving the letter and name of the apparatus that is best suited for carrying out each task.

task	letter of apparatus	name of apparatus
collecting a sample of crawling insects		
determining the population density of snails in a given area		
collecting a sample of flying insects		

[3]

(b) The photograph shows a Bahamian endangered species.

(i) State the meaning of the term endangered.

_____

_____ [1]

The table shows the population of this species between 1994 and 2016.

year	population size
1994	under 2000
2012	4000
2016	8000

(ii) What happened to the size of the population between the years 1994 to 2016?

_____ [1]

(iii) Suggest a reason for your answer to (b) (ii).

_____

_____ [1]

(c) (i) Name **TWO** important marine resources in the The Bahamas.

1. _____

2. _____ [2]

(ii) Discuss **TWO** threats to the populations of marine resources in The Bahamas.

_____

_____

_____

_____ [2]

TOTAL MARKS [10]

6. Enzymes are important substances used in the process of digestion.

(a) Describe the function of an enzyme.

_____

_____ [2]

(b) (i) State the probable effect of high temperatures on human digestive enzymes.

_____

_____ [1]

(ii) What effect does this change in (b) (i) have on the activity of the enzyme?

_____

_____ [1]

(iii) In addition to temperature, name **ONE** other factor that affects the rate of enzyme activity.

_____ [1]

(c) (i) Lipase is a digestive enzyme that breaks down fats. Describe the role of bile in the breakdown of fats.

_____

_____

_____ [2]

(ii) Name the organ that produces bile.

_____ [1]

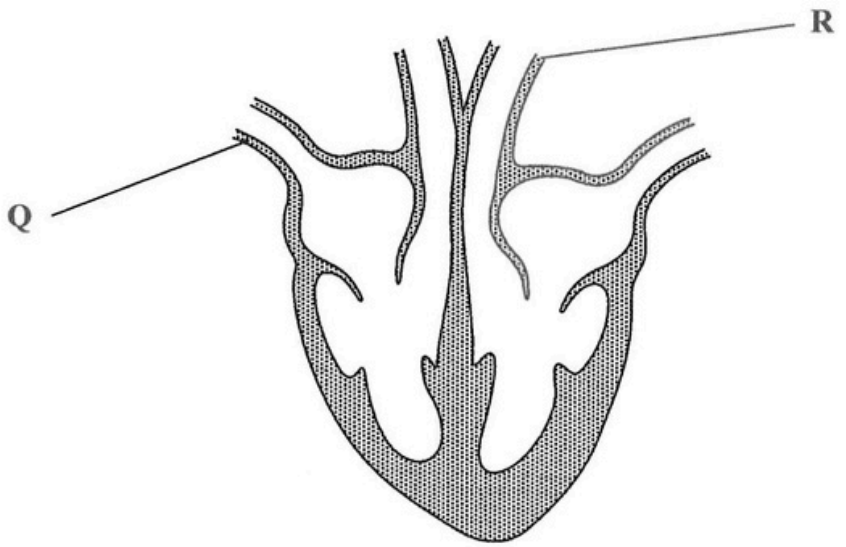
(iii) Name **ONE** group of digestive enzyme, other than lipase, and state the name of the nutrient it breaks down.

enzyme _____

nutrient _____ [2]

TOTAL MARKS [10]

7. The diagram shows a human heart.



(a) (i) On the diagram above, draw a line to a valve and name it. [2]

(ii) Describe the function of valves.

_____

_____ [1]

(b) (i) State the name of the blood vessels labelled **Q** and **R**.

Q _____

R _____ [2]

(ii) Draw **ONE** arrow inside both blood vessels **Q** and **R** to show the direction of blood flow. [2]

(c) (i) Name a common cause of heart disease.

_____ [1]

(ii) Discuss **TWO** life style changes a person could make to have a healthier heart.

_____

_____

_____ [2]

TOTAL MARKS [10]

8. (a) Define the term germination.

_____

_____ [1]

(b) State **TWO** environmental conditions needed for a seed to germinate.

_____

_____ [2]

(c) The table below shows data collected from an investigation into the effect of salt concentration on the growth of the radicle in pigeon pea seeds.

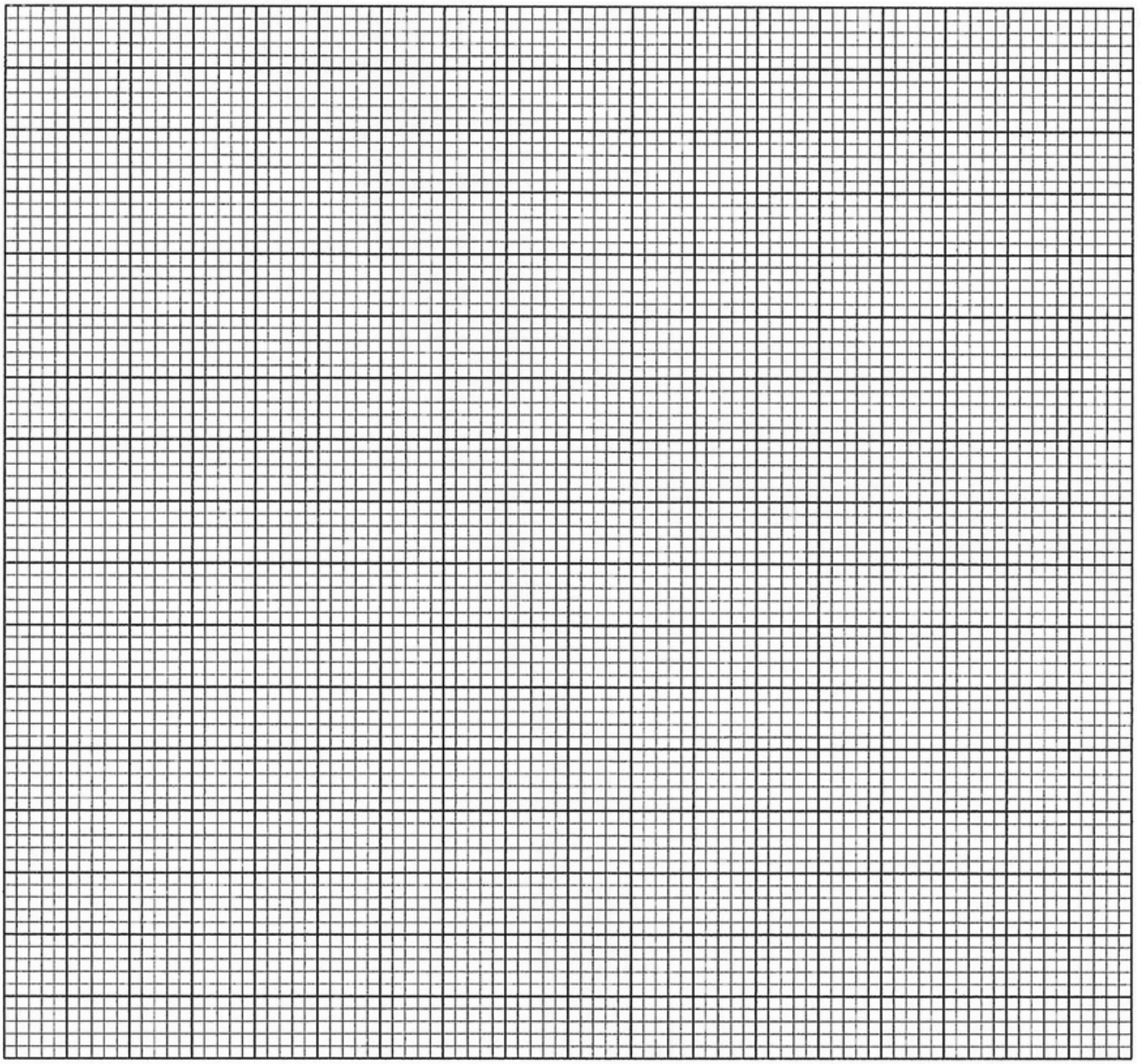
concentration of salt solution (mg/dm^3)	length of radicle (mm)
1.0	8
2.0	16
4.0	12
6.0	4
12.0	1

(i) State the function of the radicle.

_____

_____ [1]

(ii) Plot a line graph to show salt concentration against length of radicle.



[4]

(iii) State the optimum salt concentration for radicle growth in the pigeon pea.

_____ [1]

(iv) State what happens to the length of the radicle in salt concentrations above 2.00 mg/dm^3.

_____ [1]

TOTAL MARKS [10]

End]

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