

SC 504106
WASSCE 2025
BIOLOGY 1
Objective Test
50 minutes

1

Name.....

Index Number.....

- ❖ TOPIC BASE, MOCK & PAST QUESTIONS
- ❖ NOTES
- ❖ SYLLABUS
- ❖ CHIEF EXAMINERS' REPORT
- ❖ LESSON NOTES
- ❖ COURSES
- ❖ CAREER/SCHOLARSHIP OPPORTUNITIES
- ❖ CAMPUS NEWS

THE WEST AFRICAN EXAMINATIONS COUNCIL
West African Senior School Certificate Examination
for School Candidates

SC 2025

BIOLOGY 1
OBJECTIVE TEST
[50 marks]

50 minutes

Do not open this booklet until you are told to do so. While you are waiting, write your name and index number in the spaces provided at the top right-hand corner of this booklet and thereafter, read the following instructions carefully.

1. Use **2B** pencil throughout.
2. On the pre-printed answer sheet, check that the following details are **correctly** printed:
 - (a) In the space marked *Name*, check your **surname** followed by your **other names**.
 - (b) In the spaces marked *Examination*, *Year*, *Subject* and *Paper*, check 'WASSCE', 'SC 2025', 'BIOLOGY', and '1' in that order.
 - (c) In the box marked *Index Number*, your **index number** has been printed vertically in the spaces on the left-hand side, and **each** numbered space has been shaded in line with **each** digit. **Reshade** each of the shaded spaces.
 - (d) In the box marked *Subject Code*, the digits 504113 are printed vertically in the spaces on the left-hand side. **Reshade** the corresponding numbered spaces as you did for your index number.
3. An example is given below. This is for a male candidate whose *name* is Ben Abu TETTEH. His *index number* is 7102143958 and he is offering *Biology 1*.

THE WEST AFRICAN EXAMINATIONS COUNCIL
ANSWER SHEET

PRINT IN BLOCK LETTERS TETTEH BEN ABU		GHA	
Name:	WASSCE SC	Year:	2025
Examination:	BIOLOGY	Paper:	1
Subject:			

INSTRUCTIONS TO CANDIDATES

1. Use grade 2B pencil throughout.
2. Answer each question by choosing one letter and shading it like this: A B C D E
3. Erase completely any answer you wish to change.
4. Leave extra spaces blank if the answer spaces provided are more than you need.
5. Do not make any markings across the heavy black marks at the right-hand edge of your answer sheet.

INDEX NUMBER										
7	0	1	2	3	4	5	6	7	8	9
1	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
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9	0	1	2	3	4	5	6	7	8	9
5	0	1	2	3	4	5	6	7	8	9
8	0	1	2	3	4	5	6	7	8	9

SUBJECT CODE										
5	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
4	0	1	2	3	4	5	6	7	8	9
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1	0	1	2	3	4	5	6	7	8	9
3	0	1	2	3	4	5	6	7	8	9

For Supervisors only
If candidate is absent
shade this space.

Answer **all** the questions.

Each question is followed by **four** options lettered A to D. Find the **correct** option for **each** question and shade **in pencil** on your answer sheet, the answer space which bears the same letter as the option you have chosen. Give only **one** answer to **each** question. An example is given below.

Which part of the gill of fish is involved in gaseous exchange? Gill

- A. slits
- B. bars
- C. covers
- D. filaments

The correct answer is filaments, which is lettered D and therefore answer space D would be shaded.

[A] [B] [C] [D]

Think carefully before you shade the answer spaces; erase completely any answer(s) you wish to change.

Do **all** rough work on this question paper:

Now answer the following questions.

1. Which of the following vitamins is important in blood clotting?
 - A. Vitamin K
 - B. Vitamin B
 - C. Vitamin D
 - D. Vitamin E
2. The deficiency disease that results from the lack of vitamin B in humans is
 - A. kwashiorkor.
 - B. scurvy.
 - C. rickets.
 - D. beriberi.
3. The reason why a sickle cell carrier is discouraged from getting married to another sickle cell carrier is because they are **likely** to have children that are
 - A. haemophiliac.
 - B. carriers of sickle cell.
 - C. AA.
 - D. SS.

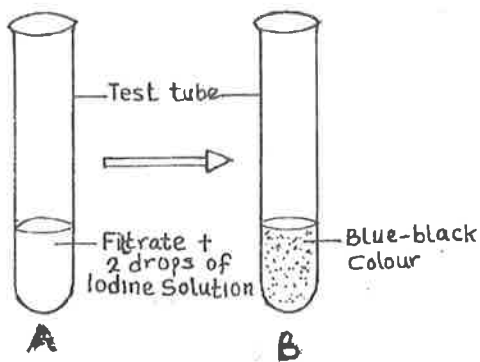
The table below shows the blood group of parents and their offspring. Use it to answer questions 4 and 5.

Blood group	Father	Mother	Son	Daughter
	A	B	O	

4. Which of the following blood group genotypes **cannot** be for the daughter?
 - A. $I^A I^B$
 - B. $I^A I^O$
 - C. $I^B I^O$
 - D. $I^A I^A$
5. If **both** parents are homozygous, the blood group of the son and the daughter would be
 - A. $I^A I^O$.
 - B. $I^A I^A$.
 - C. $I^B I^B$.
 - D. $I^A I^B$.
6. The products of photosynthesis in plants are
 - A. chlorophyll and oxygen.
 - B. glucose and oxygen.
 - C. water and carbon (IV) oxide.
 - D. glucose and water.

7. A test cross is used to determine an unknown genotype of an organism by crossing the organism with another organism of
- known homozygous dominant genotype.
 - known homozygous recessive genotype.
 - unknown genotype.
 - known heterozygous genotype.
8. If the strand sequence of bases for a *DNA* molecule is CTT, AGA, CTA and ATA, its corresponding *RNA* sequence would be
- GUU, ACA, GUA, AUA.
 - GAA, TCT, GAT, TAT.
 - CUU, AGA, CUA, AUA.
 - GAA, UCU, GAU, UAU.

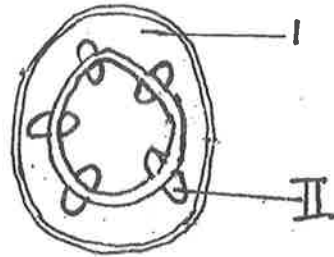
The diagram below is an illustration of a food test. Use it to answer questions 9 and 10.



9. The food substance **likely** present in the filtrate in test tube A is
- cooked starch.
 - reducing sugar.
 - milk protein.
 - oil.
10. The blue-black colour observed in test tube B is an indication that
- too much of iodine solution was used.
 - the control experiment is wrong.
 - the mixture was heated.
 - the result of the experiment is positive.

11. The first stage in the scientific method of investigation is
- setting up the control experiment.
 - stating the hypothesis.
 - assembling materials and equipment.
 - observation to identify the problem.

The diagram below is an illustration of the transverse section of a flowering plant. Study it and answer questions 12 and 13.



12. The diagram is an illustration of a
- monocotyledonous root.
 - dicotyledonous stem.
 - dicotyledonous root.
 - monocotyledonous stem.
13. The parts labelled I and II respectively are
- pith and phloem.
 - bark and xylem.
 - cortex and phloem.
 - cortex and xylem.

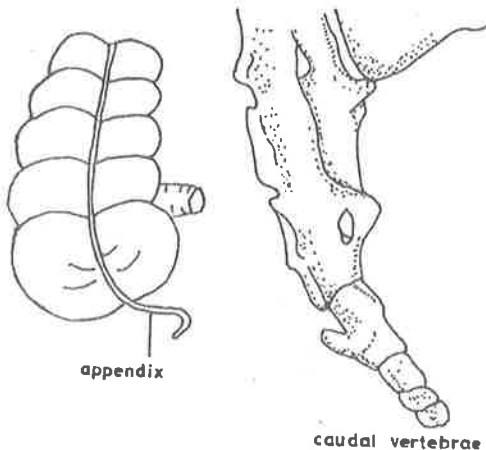
The diagrams below are illustrations of structures of a group of plants. Study them and answer questions 14 and 15.



14. The feature **common** to the group of plants is that they
- lack true roots, stem and leaves.
 - do not have flowers.
 - have broad leaves.
 - bear enclosed seeds.

15. The plants belong to Division
- Chlorophyta.
 - Angiospermophyta.
 - Coniferophyta.
 - Bryophyta.
16. Which of the following genotypic ratios would be obtained when **two** heterozygous white pea plants are crossed?
- 1:2:1
 - 1:1
 - 1:2
 - 3:1
17. What determines the sex of a baby? The
- mother's X and Y chromosomes
 - father's X and X chromosomes
 - father's X and Y chromosomes
 - mother's X and X chromosomes
18. A worker honeybee communicates with others about the location of a source of food through
- chemical signal.
 - tactile touching.
 - stinging.
 - dancing.

The diagrams below are illustrations of some body parts in humans. *Study them and answer questions 19 and 20.*



19. The body parts show an evidence of evolution from
- vestigial organs.
 - fossil records.
 - systematics.
 - embryology.

20. The explanation for the use of the body parts as an evidence of evolution is that they
- are larger in humans than in the organisms where they are useful.
 - were once useful to ancestral species.
 - have never been useful to closely related organisms.
 - are useful body parts in humans.

A teacher demonstrated geotropism in a bean seedling using a klinostat, in the laboratory.

Use the information to answer questions 21 to 23.

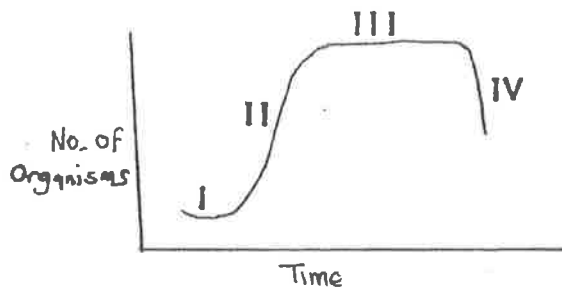
21. The parts of the seedling that showed the effect of geotropism are
- plumule and testa.
 - cotyledon and radicle.
 - cotyledon and plumule.
 - plumule and radicle.
22. The part of the seedling that responded positively to geotropism is
- testa.
 - plumule.
 - radicle.
 - cotyledon.
23. The structure in the seedling that would develop into the shoot is the
- testa.
 - plumule.
 - radicle.
 - cotyledon.

A group of students set up a private game reserve in their locality. *Use the information to answer questions 24 and 25.*

24. The resources that will **mostly** be conserved are
- soil and forest.
 - soil and water.
 - mineral resources and forests.
 - wildlife and forest.

25. Which of the following statements is **not** an advantage of the game reserve to the host community?
- Food for predators
 - Tourism
 - Preservation of species
 - Income

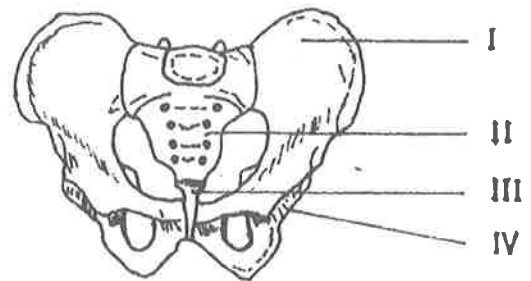
The graph below shows the growth curve of microorganisms. *Study it and answer questions 26 and 27.*



26. Which of the labelled parts is the lag phase?
- I
 - II
 - III
 - IV
27. At which phase is the growth rate greater than the death rate?
- I
 - II
 - III
 - IV
28. A measure that aids conservation of trees is
- regular planting of tree crops.
 - killing of all herbivores.
 - inadequate funding of forestry projects.
 - inadequate number of forest guards.
29. Which of the following practices **cannot** be used when conserving nonrenewable resources? Use of
- petrol and diesel engines in cars
 - electric cars
 - ethanol to power cars and generating sets
 - solar panels to light up homes

30. Which of the following statements about variation in humans is **not** correct?
- Blood group is an example of variation
 - Human populations have same features but each differs from others
 - Variations can be observed in behaviours or physical appearance
 - All kinds of variations in a population will be inherited

The diagram below is an illustration of parts of a human skeleton. *Study it and answer questions 31 and 32.*



31. Which of the labelled parts is a vestigial structure?
- I
 - II
 - III
 - IV
32. What type of joint is formed at the part labelled IV?
- Ball and socket
 - Hinge
 - Gliding and suture
 - Pivot
33. Which of the following vessels of the heart contains the **most** oxygenated blood?
- Pulmonary vein
 - Posterior vena cava
 - Anterior vena cava
 - Pulmonary artery
34. Which of the following respiratory structures are possessed by terrestrial animals?
- Lungs
 - Breathing roots
 - Gills
 - Stomata

35. The substance that produces the oxygen that is given off during photosynthesis is
- sunlight.
 - water.
 - air.
 - carbon (II) oxide.
36. Ecologists work in the following areas **except**
- hot deserts.
 - forests.
 - oceans.
 - food industries.
37. The **major** habitat of homeotherms is
- estuarine.
 - freshwater.
 - marine.
 - terrestrial.
38. Which of the following ecological factors is unique to brackish water?
- High temperature
 - Low light intensity
 - Dissolved oxygen
 - Moderate salinity
39. Which of the following instruments is used to measure water transparency?
- Photometer
 - Secchi disc
 - Anemometer
 - Hydrometer
40. Lichens are living organisms composed of
- algae and fungi.
 - algae and sea anemone.
 - sea anemone and hermit crab.
 - termite and protozoa.
41. Which of the following terms describes the ability of the body to maintain a steady internal environment?
- Metabolism
 - Tolerance
 - Catabolism
 - Homeostasis
42. Which of the following pathways shows how a nerve impulse is transmitted?
- Axon → dendrites → synapse → cell body
 - Axon → cell body → synapse → dendrites
 - Dendrites → cell body → axon → synapse
 - Synapse → cell body → dendrites → axon
43. The part of the human eye that prevents internal reflection of light is the
- vitreous humour.
 - cornea.
 - choroid.
 - iris.
44. After fertilisation in flowers, the ovary develops to form the
- endosperm.
 - seed.
 - fruit.
 - cotyledon.
45. A faster colour change of a dry cobalt chloride paper affixed to the lower surface of a leaf compared to that at the upper surface indicates that
- stomata are not present at the upper surface of the leaf.
 - sunlight slows down water loss from the lower surface.
 - the lower surface of a leaf has more stomata than the upper surface.
 - sunlight causes the stomata at the upper surface to close.
46. Which of the following statements about a food web is **not** correct?
- Organisms in a food web have less chances of survival
 - It involves more organisms
 - It contains two or more food chains
 - It involves complex feeding relationships
47. Which of the following associations is an example of parasitism?
- Lion and goat
 - Alga and fungus
 - Bacteria in the rumen of ruminants
 - Mistletoe and flowering plants

48. People living in an industrial area where heavy machineries are used always raise their voices when talking to one another. What is **likely** responsible for the behaviour?
- A. It is their usual habit
 - B. They are excited
 - C. They lack communication etiquette
 - D. They have partial deafness due to noise pollution
49. The use of predatory fish to control the population of mosquito larvae is a form of
- A. mechanical control.
 - B. physical control.
 - C. chemical control.
 - D. biological control.
50. Which of the following organisms is the vector of river blindness?
- A. Moth
 - B. Tsetse fly
 - C. Blackfly
 - D. Mosquito

END OF PAPER

SC5042
 WASSCE 2025
 BIOLOGY 2
 Essay
 1 hour 40 minutes

2

CANDIDATE'S NAME	
INDEX NUMBER	SIGNATURE
DATE:	

THE WEST AFRICAN EXAMINATIONS COUNCIL

West African Senior School Certificate Examination
 for School Candidates

SC 2025

BIOLOGY 2
 ESSAY
 [70 marks]

1 hour 40 minutes

INSTRUCTIONS TO CANDIDATES

1. In the spaces provided above, insert your **name**, full **index number**, normal **signature** and the **date** of examination.
2. This booklet consists of **two** sections: **A** and **B**. Answer **three** questions in **all**: **two** questions from section **A** and **one** compulsory question from section **B**.
3. Write your **name**, **index number** and the **number** of each question you answer, at the top of each page.
4. Write on **both** sides of the paper unless otherwise instructed on the question paper.
5. Begin **each** answer to a question on a fresh page. Leave two lines between answers where there are sub-sections to the same question.
6. On **no** account should you tear off any part of the booklet. It is an examination malpractice to do so. The answer booklet will be collected at the end of the examination.
7. Write in the space provided below, the **question number** of the questions you have answered, in the order in which you have written them.

--

For Examiner's Use Only	
Question Number	Mark
TOTAL	

Answer **three** questions in **all**: **two** questions from Section A and the compulsory question in Section B.

Write your answers in **ink** in this booklet.

Clear diagrams should be used where necessary. The names given for chosen species **must** be English or scientific and **not** vernacular.

Credit will be given for clarity of expression and orderly presentation of answers.

SECTION A
[40 marks]

Answer **two** questions **only** from this section.

1. **Two** *Spirogyra* filaments **A** and **B** were **each** placed in concentrated sugar solution and dilute sugar solution, in **different** beakers respectively. The setups were left for **one** hour.

- (a) Which of the filaments was placed in a:
(i) hypotonic solution;

- (ii) hypertonic solution?

[2 marks]

- (b) If the cells of the filaments were observed under a microscope, state **two** changes **each** that would be observed in the cells of filament:

- (i) **A**;

- (ii) **B**.

[4 marks]

- (c) Name the process that led to the changes in the cells of filament:

- (i) **A**;

- (ii) **B**.

[2 marks]

Do not write in this margin.

(d) (i) What is *homeostasis*?

[2 marks]

(ii) State **one** function of the mammalian skin in homeostasis.

[1 mark]

(e) Make a diagram 8 *cm* to 10 *cm* long of the longitudinal section of a mammalian skin and label **only** the parts that perform the following functions:

- (i) production of sebum;
- (ii) production of sweat;
- (iii) makes the hair shaft stand erect;
- (iv) transmits the stimulus of touch.

[9 marks]

2. (a) (i) What are *microelements* in plant nutrition?

[2 marks]

Do not write in this margin.

(ii) Give **three** examples of *microelements*.

[3 marks]

(b) Complete the table below.

<i>Element</i>	One importance of element in plants	One deficiency symptom of element in plants
Nitrogen	Protein synthesis	
Magnesium		
Phosphorus		
Potassium		Yellowing of leaves

[6 marks]

(c) Name the phases of photosynthesis.

[2 marks]

(d) Complete the table below.

<i>Organ</i>	<i>Fluid produced</i>	<i>Where fluid is stored</i>	Two functions of fluid in digestion	<i>Site of action for fluid produced</i>
		Gall bladder		

[5 marks]

(e) On the table below, state **two** differences between the alimentary canal of a domestic fowl and the alimentary canal of a human.

<i>Alimentary canal of a domestic fowl</i>	<i>Alimentary canal of a human</i>

[2 marks]

Candidate's Name:.....

Do not write in this margin.

3. (a) Explain **briefly** the term *ecosystem*.

(b) State **four** ways by which plants are beneficial to animals.

[3 marks]

(c) Explain **briefly** how the following ecological components affect the population of *Talinum* in a garden:

[4 marks]

(i) temperature;

(ii) herbivores;

(iii) rainfall;

(iv) decomposers.

[8 marks]

(d) Explain **briefly each** of the following biological associations:

(i) *commensalism*;

(ii) *mutualism*.

(e) Name **one** method of enumerating the population size of mango trees in a community.

[4 marks]

[1 mark]

4. A cross between **two** parents, **each** heterozygous (**Aa**) for albino trait, produced **four** offspring. Use the information to answer questions 4(a) to 4(c).

(a) Using a genetic diagram, show the possible genotypes of the offspring.

[8 marks]

(b) Give the:

(i) phenotype of the parents;

_____ [1 mark]

(ii) genotypic ratios of the offspring;

_____ [2 marks]

(iii) number of offspring that will **not** be albino;

_____ [1 mark]

(iv) number of offspring that will be albino;

_____ [1 mark]

(v) reason for the answer in 4(b)(iv).

_____ [1 mark]

(c) (i) State the type of cross in 4(a).

_____ [1 mark]

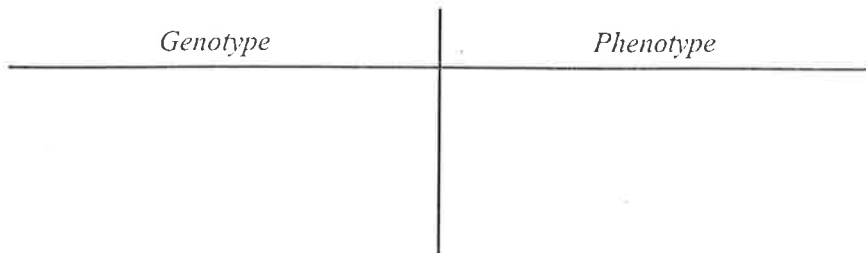
(ii) Mention the law of genetics that supports the genotypes of the offspring in 4(a).

_____ [1 mark]

Do not write in this margin.

(d) In a genetics class, the following answers were obtained from different genetic crosses. Place them under their appropriate genetic terms.

- (i) All white fur.
- (ii) **BB, BB, Bb, Bb.**
- (iii) 3 wrinkled seeds and 1 smooth seed.
- (iv) **AS, AS, AS, AS.**



[4 marks]

SECTION B
[30 marks]

Answer all the questions in this section.

5. (a) (i) Name **two** processes by which leaves of plants lose water.

[2 marks]

(ii) Explain **briefly each** of the processes named in 5(a)(i).

[4 marks]

(b) (i) Arrange the following structures of a stem, from the **inner** part to the **outer** part.

Medullary ray, Cortex, Epidermis, Pith.
--

[4 marks]

(ii) Name **three** forces that move water from the roots to the leaves of plants.

[3 marks]

(c) Explain **briefly** how *Spirogyra* survives in a dry pond.

[4 marks]

(d) (i) Explain **briefly** the term *Recombinant DNA technology*.

[3 marks]

(ii) State **two** applications of *Recombinant DNA technology*.

[2 marks]

(e) Distinguish between:

(i) bilateral symmetry and radial symmetry;

[2 marks]

(ii) longitudinal section and transverse section.

[2 marks]

(f) (i) What is *antenatal care*?

[2 marks]

(ii) List **two** benefits derived from antenatal visits.

[2 marks]

END OF PAPER