

EXAM: Biology and Health Sciences I (Theory)

Date: 16th June 2025

Period: 08:30 AM – 11:30 AM



END OF TERM III EXAMINATION, SCHOOL YEAR: 2024-2025

QUESTION PAPER

GRADE: SENIOR ONE (S1)

LEVEL: ORDINARY LEVEL

OTION: ORDINARY LEVEL

DURATION: 3 HOURS

MARKS:/100

CAMIS (Theory + Practical):

...../40

INSTRUCTIONS:

- 1) Do not open this question paper until you are told to do so.
- 2) This paper consists of **THREE** sections: **A, B** and **C**.
 - Section A:** Attempt **all** questions. **(55 marks)**
 - Section B:** Attempt any **three** questions. **(30 marks)**
 - Section C:** Attempt any **one** question. **(15 marks)**
- 3) The total marks on school report will be the results of adding Theory's and Practical Examination's marks then converted to **40 marks**.
- 4) Use only a **blue** or **black** pen.

Section A: Attempt all questions. (55 marks)

- 1) Plants and animals are both livings. They differ in: **(1 mark)**
- a) Growth.
 - b) Nutrition.
 - c) Movement.
 - d) Excretion.
-

- 2) The smallest group of classification where living organisms resemble each other and are capable of interbreeding together to give viable/fertile offspring is called: **(1 mark)**
- a) Kingdom.
 - b) Genus.
 - c) Sub genus.
 - d) Species.
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- 3) **True/False** questions based on the importance of fungi to other organisms. **(5 marks)**

a) Fungi play a critical role in nutrient cycling by decomposing organic matter and breaking down dead plants and animals.

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b) Fungi provide mutualistic relationships with plants by forming mycorrhizal associations, which help plants absorb water and nutrients from the soil.

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c) Fungi are primarily harmful to other organisms, as they cause diseases in plants, animals, and humans.

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d) Fungi are involved in the production of important substances such as antibiotics, like penicillin, which benefit humans and other organisms.

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e) Fungi help to break down toxic substances in the environment, contributing to the bioremediation process.

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- 4) The main difference between a dicotyledonous leaf and a monocotyledonous leaf is: **(2 marks)**

a) Monocot leaf has a pointed apex while a dicot leaf has a rounded apex.

b) A monocot leaf has a network venation while a dicot leaf has an articulate venation.

c) A monocot leaf has a parallel venation while a dicot leaf has a network venation.

d) A monocot leaf has a network venation while a dicot leaf has a parallel venation.

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- 5) What is one environmental benefit of flowering plants in the school compound? **(1 mark)**

a) They increase the risk of soil erosion.

b) They contribute to global warming.

c) They reduce air pollution and enhance environmental quality.

d) They consume large amounts of water with no benefits.

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6) True/False questions:

(5 marks)

a) Plants are essential for producing oxygen, which is necessary for the survival of most living organisms on Earth.

b) Without plants, Earth would have an abundance of food sources for animals and humans.

c) The absence of plants would lead to a significant decrease in the amount of carbon dioxide in the atmosphere.

d) Plants help in maintaining the water cycle, and without them, the water cycle would be disrupted.

e) Without plants, there would be no habitat for many animal species, leading to a breakdown of ecosystems.

7) Which statement is correct about microscope?

(2 marks)

a) It is used to observe far-located objects.

b) It used to observe small objects.

c) It is used to observe microscopic cells that cannot be seen by unaided eyes.

d) It is used to observe very big objects reducing their sizes so to fit the size of our eyes.

8) How do magnifying instruments enhance our understanding of biology?

(1 mark)

a) By making objects appear smaller.

b) By helping us observe and study minute details that are vital to understanding how organisms function and interact.

c) By making living organisms easier to catch.

d) By improving the shape of organisms.

9) Which of the following best describes the significance of the cell as the basic unit of life?

(1 mark)

a) Cells are the largest part of an organism.

b) Cells only perform physical functions, not chemical reactions.

c) Only animals are made up of cells.

d) All living organisms are made up of cells, and all life processes occur within cells.

10) How does the large number of mitochondria in the sperm cell help it perform its function?

(1 mark)

a) They provide energy for the sperm's movement through the female reproductive system.

b) They help store nutrients for the sperm cell.

c) They protect the sperm from immune system attacks.

d) They assist in cell division during fertilization.

11) This group of food is our body's best source of energy.

(1 mark)

- a) Meat group.
- b) Fats, oils and sweets.
- c) Bread and cereals.
- d) Milk and cheese.

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12) Suppose you are a mother/father, and you need to feed your family properly. Which diet would be better for them? (2 marks)

- a) Rice + meat + fish + chips.
- b) Rice + fish + vegetables + fruits + beans.
- c) Rice + meat + milk + eggs.
- d) Meat + eggs + milk.

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13) Match the effect of an unbalanced diet with the possible health consequence: (5 marks)

Unbalanced diet	Possible health consequence
1. Excessive sugar intake	A. Weight gain and obesity.
2. Excessive salt intake	B. Increased risk of hypertension.
3. Lack of fiber	C. Constipation and digestive issues.
4. Insufficient calcium intake	D. Weak bones and increased risk of fractures.
5. Too much fat	E. Increased cholesterol and heart disease risk.

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14) Complete the sentences below using these words: **towards, phototropism, roots, stimulus, negatively**. Each word must be used once. (5 marks)

- a) The growth of a stem _____ or away from a light _____ is called _____.
- b) Plant stems are _____ gravitropic.
- c) Plant _____ are positively gravitropic

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15) A farmer observes that his/her tomato plants are growing towards the light coming from the window. What type of tropic response is this, and how can the farmer use this response to enhance plant growth? (2 marks)

- a) **Hydrotropism**; The farmer should water the plants from one side to encourage even growth.
- b) **Thigmotropism**; The farmer should provide structures for the plants to climb and grow in a more compact space.
- c) **Phototropism**; The farmer should ensure that the plants receive adequate light on all sides to encourage even growth.
- d) **Gravitropism**; The farmer should rotate the plants regularly to ensure they grow evenly.

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16) Match the following bones with their location in human skeletal system. **(4 marks)**

Name of bone	Location
1. Femur	A. Head
2. Coccyx	B. Arm
3. Skull	C. End of vertebrae
4. Ulna	D. Leg

.....

17) Which of the following is a major difference between endoskeletons and exoskeletons? **(2 marks)**

- a) Endoskeletons are made of chitin, whereas exoskeletons are made of bone.
- b) Exoskeletons are internal, while endoskeletons are external.
- c) Endoskeletons are found inside the body, while exoskeletons are found outside the body.
- d) Exoskeletons are only found in mammals, while endoskeletons are found in all animals.

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18) Copy the terms and definitions below about diseases and draw straight lines to match each of the terms to its best definition. **(4 marks)**

Term	Definition
1. Carrier	A. A disease in which the pathogen can be passed from one host to another.
2. Pathogen	B. A poison which can be produced by some bacteria.
3. Toxin	C. A disease-causing organism.
4. Infectious disease	D. A person who carries pathogens without showing any signs of the disease

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19) Where in female reproductive system does a foetus develop from during pregnancy? **(1 mark)**

- a) Cervix.
- b) Fallopian tubes.
- c) Uterus.
- d) Vagina.

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- 20) How can understanding the menstrual cycle help prevent unwanted pregnancy? (1 mark)**
- a) By identifying the fertile window to avoid unprotected sex.
 - b) By increasing the chances of conception.
 - c) By promoting ovulation in every cycle.
 - d) By ensuring regular menstrual cycles.
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- 21) Ovulation phase during menstrual cycle is also described as the most fertile period. Which one of the following best explains why? (1 mark)**
- a) During this period a mature egg is released to the oviduct hence ready for fertilization.
 - b) The egg is released but not yet mature.
 - c) There is healing and repair of inner uterine lining
 - d) This is the only period when fertilization can occur.
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- 22) Which of the following accurately compares the sexual changes that occur in boys and girls during puberty? (2 marks)**
- a) Boys develop breasts and girls experience facial hair growth.
 - b) Boys experience growth of facial and body hair, while girls develop breasts.
 - c) Boys' hips widen and girls' shoulders broaden.
 - d) Boys start menstruation and girls experience deepening of the voice.
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- 23) Which of the following reasons explains why pregnant women should avoid drugs and alcohol during pregnancy? (1 mark)**
- a) Drugs and alcohol can increase the chances of multiple births.
 - b) Drugs and alcohol can harm the development of the baby's brain and organs.
 - c) Drugs and alcohol can help in the development of the baby's immune system.
 - d) Drugs and alcohol have no effect on pregnancy outcomes.
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- 24) Normally a human being gestation period is nine months. If your neighbour of seven months pregnant declares uterine contractions, what can you do to her? (1 mark)**
- a) Tell her to quickly go to the nearest hospital for medical check-up.
 - b) Tell her to go to have a rest for a while maybe the pain will pass.
 - c) Try to help her by myself even though I'm not a doctor.
 - d) Call her husband who went far and ask him to come and help her.
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- 25) True/False questions on determination of sex for a human bay. (3 marks)**
- a) The sex of a human baby is determined at the moment of fertilization.
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 - b) The sex of a baby can change after birth due to genetic factors.
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 - c) Ultrasound can be used to observe the sex of a fetus, but it does not determine it.
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 - d) The mother's body decides the sex of the baby during pregnancy.
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Section B: Attempt any three questions. (30 marks)

26) Flowering plants contribute to the oxygen-carbon dioxide balance, support food chains by providing food for herbivores, and maintain biodiversity by offering habitats for various organisms. Additionally, they play a vital role in maintaining soil health and preventing erosion through their root systems. Do you agree with this statement? Give five main reasons to support your answer. **(10 marks)**

[illegible]

27) The Rwandan government encourages its citizens to participate in sport. Discuss the impact that sport can have on our health. **(10 marks)**

[illegible]

(10 marks)

29) Sex organs play an irreplaceable role in increasing human population. Do you agree with this statement? Defend your answer. **(10 marks)**

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Section C: Attempt any one question. (15 marks)

30) The process of gaseous exchange is vital for human life. Design a model to explain how this process works in the human body and justify why it is essential for survival.

(15 marks)

This image shows a full page of a document template designed for handwritten notes or essays. It features approximately 30 evenly spaced horizontal grey lines across the entire width of the page. The margins are consistent on all sides, providing ample space for writing. There are no pre-printed questions, headings, or other markings on the page.

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**EXAM: Biology and Health Sciences I
(Alternative to Practical Examination)**

Date: 24th June 2025

Period: 08:30 AM – 10:00 AM



END OF TERM III EXAMINATION, SCHOOL YEAR: 2024-2025

MARKING GUIDE

GRADE: SENIOR ONE (S1)
LEVEL: ORDINARY LEVEL
OTION: ORDINARY LEVEL

DURATION: 1:30 MINUTES

MARKS:/20

CAMIS (Theory + Practical):/40

INSTRUCTIONS:

- 1) Do not open this question paper until you are told to do so.
- 2) This paper consists of only one question, and it is marked on a total of **20 marks**.
- 3) The total marks on school report will be the results of adding Theory's and Practical Examination's marks then converted to **40 marks**.
- 4) Use only a **blue** or **black** pen and a **pencil** for drawing.

MARKING SCHEME FOR S.1 END OF TERM 3 EXAMINATION 2024

SUBJECT: BIOLOGY AND HEALTH SCIENCES (ALTERNATIVE TO PRACTICAL)

Question:

Assume you are provided with materials and reagent to carry out a food test experiment to identify the major nutrients (carbohydrates, proteins, and fats) in three different food samples.

Materials and Reagents Needed:

- Food samples (Sweet potato, Boiled egg, Avocado)
- Test tubes and test tube rack
- Droppers
- Beakers
- Water bath or heat source
- Benedict's solution (for reducing sugars)
- Iodine solution (for starch)
- Biuret solution (for proteins)
- Ethanol and distilled water (for fats)
- Mortar and pestle
- Filter paper (optional)
- Labels and marker
- Safety gear (gloves, goggles)

- a) Based on your knowledge on food test and having the provided samples and reagents, complete the observation table below. **(9 marks)**

Food Sample	Iodine Test (Starch)	Benedict's Test (Sugar)	Biuret Test (Protein)	Ethanol Test (Fat)
A (Sweet potato)	Blue-black	Orange	No change	No emulsion
B (Boiled Egg)	No change	No change	Purple	No emulsion
C (Avocado)	No change	No change	No change	Milky emulsion

b) Results Interpretation:

- **Sample A (Sweet potato)** contains **starch and reducing sugars** → high in **carbohydrates**. **(2 marks)**
- **Sample B (Boiled egg)** contains **proteins** → rich in **body-building nutrients**. **(2 marks)**
- **Sample C (Avocado)** contains **fats** → high in **energy-giving nutrients**. **(2 marks)**

c) Conclusion:

Each food sample contains a different major nutrient:

- Sweet potato is rich in carbohydrates (energy source), **(1 mark)**
- Boiled egg is rich in protein (body-building), **(1 mark)**
- Avocado is rich in fats (energy storage). **(1 mark)**

To achieve a **balanced diet**, a combination of these three food types would provide essential nutrients — energy, growth, and repair components. Therefore, including all three in appropriate amounts would make a well-rounded meal. **(2 marks)**

-END-

**EXAM: Biology and Health Sciences I
(Practical Examination)**

Date: 24th June 2025

Period: 08:30 AM – 10:00 AM



END OF TERM III EXAMINATION, SCHOOL YEAR: 2023-2024

MARKING GUIDE

GRADE: SENIOR ONE (S1)
LEVEL: ORDINARY LEVEL
OTION: ORDINARY LEVEL

DURATION: 1:30 MINUTES

MARKS:/20

CAMIS (Theory + Practical):/40

INSTRUCTIONS:

- 1) Do not open this question paper until you are told to do so.
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MARKING SCHEME FOR S.1 END OF TERM 3 EXAMINATION 2025

SUBJECT: BIOLOGY AND HEALTH SCIENCES (PRACTICAL)

You are provided with materials and reagent to carry out a food test experiment to identify the major nutrients (carbohydrates, proteins, and fats) in three different food samples.

➤ **Materials and Reagents Needed:**

- Food samples (Sweet potato, Boiled egg, Avocado)
- Test tubes and test tube rack
- Droppers
- Beakers
- Water bath or heat source
- Benedict's solution (for reducing sugars)
- Iodine solution (for starch)
- Biuret solution (for proteins)
- Ethanol and distilled water (for fats)
- Mortar and pestle
- Filter paper (optional)
- Labels and marker
- Safety gear (gloves, goggles)

➤ **Procedure (Manipulation) - Steps:**

1. **Test for starch (Iodine Test):**

- ✓ Add a few drops of iodine solution to each sample.
- ✓ **Observe any colour change (blue-black indicates starch).**

2. **Test for reducing sugars (Benedict's Test):**

- ✓ Add 2 cm³ of Benedict's solution to each sample.
- ✓ Heat the mixture in a water bath for 2–5 minutes.
- ✓ **Observe any colour change (green/yellow/orange/red indicates reducing sugars).**

3. **Test for proteins (Biuret Test):**

- ✓ Add 2 cm³ of Biuret solution to each sample.
- ✓ Gently shake and observe **(purple colour indicates protein).**

4. **Test for fats (Ethanol Emulsion Test):**

- ✓ Mix a small amount of sample with ethanol, shake, then add to water.
- ✓ **A milky-white emulsion indicates presence of fats.**

a) Observation Table:**(12 marks)**

Food Sample	Iodine Test	Benedict's Test	Biuret Test	Ethanol Test
A (Sweet potato)	Blue-black	Orange	No change	No emulsion
B (Boiled egg)	No change	No change	Purple	No emulsion
C (Avocado)	No change	No change	No change	Milky emulsion

b) Results Interpretation:

- **Sample A (Sweet potato)** contains **starch and reducing sugars** → high in **carbohydrates**. **(2 marks)**
- **Sample B (Boiled egg)** contains **proteins** → rich in **body-building nutrients**. **(2 marks)**
- **Sample C (Avocado)** contains **fats** → high in **energy-giving nutrients**. **(2 marks)**

c) Conclusion:

Each food sample contains a different major nutrient:

- Sweet potato is rich in carbohydrates (energy source),
- Boiled egg is rich in protein (body-building),
- Avocado is rich in fats (energy storage).

To achieve a **balanced diet**, a combination of these three food types would provide essential nutrients — energy, growth, and repair components. Therefore, including all three in appropriate amounts would make a well-rounded meal. **(2 marks)**