

BIOLOGY

Date:05/July/2022

Period: 8H30'-11H30'



END OF TERM III EXAMINATIONS

LEVEL: Senior One

DURATION: 3 HOURS

MARKS: /100

INSTRUCTIONS

1. All questions are compulsory
2. Don't open this question paper until you are told to do so.
3. Read each question carefully before answering it.
4. Use only a **blue** or black **pen**

Answer all questions

(100 Marks)

- 1) The following are branches of biology: zoology, botany, anatomy, physiology, nutrition, heredity and ecology. Which branch or branches can be studied by a student who wants to be: **(5 Marks)**
- a) Medical doctor and a surgeon
 - b) A food scientist
 - c) Forensic scientist
 - d) Agriculture researcher
 - e) An environmentalist
- 2) Do plants and animals feed in the same way? Justify your answer. **(4 Marks)**
- 3) How does a dead organism differ from non-living organism? **(4 Marks)**
- 4) A student wrote a scientific name of a human being as homo Sapiens.
- a) Identify three mistakes made by the student. **(3 Marks)**
 - b) Rewrite the scientific name above to correct the mistake **(1 Marks)**
 - c) To which genus does a human being belong? Give a reason to support your **(2 Marks)**
- 5) Describe how leaves are modified to their functions. **(5 Marks)**
- 6) State four functions of the stem to the plant. **(4 Marks)**
- 7) Name one disadvantage of an exoskeleton. **(2 Marks)**
- 8) State any five functions of the skeleton **(5 Marks)**
- 9) A senior one student used a light microscope to observe and draw a transverse section of a leaf petiole, he indicated a magnification of $\times 400$. Given that the eye piece lens was marked $\times 10$. Workout the objective lens magnification. **(4 Marks)**
- 10) State whether each of the following is either unicellular or multicellular. **(6 Marks)**
- (i) Plasmodium

- (ii) Amoeba
 - (iii) Mosquito
 - (iv) Spirogyra
 - (v) Moulds
 - (vi) Bacteria
- 11) Explain why magnifying instruments are necessary in study of biology. **(4 Marks)**
- 12) a) Explain why some cells in your body have more number of mitochondria than others? **(2 Marks)**
- b) Explain why a cell is considered as a structural and functional unit of any living organism. **(2 Marks)**
- 13) Explain the reasons for each of the following
- a) Carrots are good for you. **(2 Marks)**
 - b) A person who has been sun bathing all day eats a salt tablet. **(2 Marks)**
 - c) A mother gives her child an orange juice **(2 Marks)**
- 14) Here are some of the main types of chemical substances we need in our diet. **(4 Marks)**
- 1) Carbohydrates
 - 2) Proteins
 - 3) Water
 - 4) Fats

Match them up with the following functions they do in our bodies.

- a) Make up most of the mass of our bodies
 - b) Heat insulation in the skin
 - c) Main source of energy in respiration
 - d) Needed for growth and repair of cells and tissues.
- 15) Suggest a nutritional advice to an obese person. **(4 Marks)**
- 16) Assume you are appointed as a medical doctor of AMAVUBI football national team. Compose a presentation on maintaining a health skeletal system of your players. **(10 Marks)**
- 17) What is the importance of the following hormones during menstrual cycle? **(4 Marks)**
- a) Progesterone
 - b) Follicle Stimulating Hormone
 - c) Luteinizing hormone

d) Oestrogen

- 18) Describe secondary physical characteristics in female and males **(6 Marks)**
- 19) Suggest causes of early pregnancies among adolescents? **(6 Marks)**
- 20) a) Why is urine used to test for pregnancy ? **(3 Marks)**
- b) Why is it not advisable for expectant mother to smoke and take alcohol? **(4 Marks)**

End !!!!

Biology senior one marking schemes

Answer all questions

(100 Marks)

- 1) The following are branches of biology: zoology, botany, anatomy, physiology, nutrition, heredity and ecology. Which branch or branches can be studied by a student who wants to be: **(5 Marks)**

- a) Medical doctor and a surgeon
- b) A food scientist
- c) Forensic scientist
- d) Agriculture researcher
- e) An environmentalist

Answer

- a) Anatomy, physiology and nutrition
- b) Nutrition
- c) Heredity
- d) Botany
- e) Ecology

- 2) Do plants and animals feed in the same way? Justify your answer.

(4 Marks)

Answer

No, because plants are autotrophs thus make their own food using chlorophyll absorbed by sunlight during photosynthesis whereas animals are heterotrophs i.e. they are unable to make their own food hence feed on already made food.

- 3) How does a dead organism differ from non-living organism? **(4 Marks)**

Answer

Both do not differ from each other because they do not show characteristics of living organisms.

OR

Anything that is dead is no longer living and hence is said to be non-living thing.

Differences

DEAD	NON-LIVING
Once alive	Never alive

Although dead, still shows the cellular structure	Does not exhibit the cellular strucure
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- 4) A student wrote a scientific name of a human being as homo Sapiens.
- a) Identify three mistakes made by the student . **(3 Marks)**
- b) Rewrite the scientific name above to correct the mistake **(1 Marks)**
- c) To which genus does a human being belong? Give a reason to support your answer **(2 Marks)**

Answer

- a) She wrote a generic name beginning with small letter
She wrote species/specific name beginning with a capital letter
She did not put the scientific name in italics
- b) *Homo sapiens*
- c) Homo. Because the name that is written first belongs to the genus
- d) Sapiens

- 5) Describe how leaves are modified to their functions. **(5 Marks)**

Answer

1. Leaves are modified into **tendrils** for climbing other plants by coiling around support plants e.g in pea plants, passion fruit plant.
2. Leaves are modified into thorns for protection e.g in cactus
3. Leaves are modified into succulent leaves and store a lot of water e.g Aloe vera, sisal, onions(bulbs).
4. Some leaves have leaf buds on their margins which are modified for vegetative reproductive e.g in bryophyllum plant leaves
5. Some leaves are modified into brightly coloured bracts to attract pollinating agents such as insects.

Some leaves of insectivorous plants are modified into pitchers which act as a trap e.g in Venus fly trap plant.

- 6) State four functions of the stem to the plant. **(4 Marks)**

Answer

- They hold or support leaves in a good position to absorb light for photosynthesis
- They store food in form of starch and sucrose eg in sugarcane

- They contain xylem which conducts water and mineral salts to the leaves
- They contain phloem vessels which conduct manufactured food from leaves to other parts of the plant.
- Stem hold and support flowers and expose them to pollinating agents and fruits to agents of dispersal.
- Some stems are used for vegetative propagation for example in sugar canes, cassava and irish potatoes

7) Name one disadvantage of an exoskeleton. **(2 Marks)**

Answer

Disadvantages include heightened vulnerability during the molting process and restrictive in terms of sizes and weights (growth is limited).

8) State any five functions of the skeleton **(5 Marks)**

Answer

-It supports the body

-Protects delicate organs of the body

-It provide muscle attachment

-It gives body shape

-It brings about movement due to muscles attachment

-It enables formation of blood cells such as red blood cells and white blood cells.

9) A senior one student used a light microscope to observe and draw a transverse section of a leaf petiole, he indicated a magnification of x400. Given that the eye piece lens was marked x10. Workout the objective lens magnification. **(4 Marks)**

Answer

The total magnification=eye piece magnification power x objective lens magnification power

Therefore power of objective lens=total magnification /eye piece magnification power

$$=400/10 = X40$$

Magnification power of objective lens is X40

10) State whether each of the following is either unicellular or multicellular. **(6 Marks)**

- (i) Plasmodium
- (ii) Amoeba
- (iii) Mosquito
- (iv) Spirogyra
- (v) Moulds
- (vi) Bacteria

Answer

- i) Unicellular
- ii) Unicellular
- iii) Multicellular
- iv) Multicellular
- v) Multicellular
- vi) Unicellular

- 11) Explain why magnifying instruments are necessary in study of biology. **(4 Marks)**

Answer

They enlarge objects for better observation of microbes, structure of the cells, blood cells

- 12) a) Explain why some cells in your body have more number of mitochondria than others? **(2 Marks)**

Answer

Some are more active than others.

- b) Explain why a cell is considered as a structural and functional unit of any living organism. **(2 Marks)**

Answer

A cell is a structural unit because all living organisms build up from a single cell. It is a functional unit because all chemical activities of organisms take place within cells.

- 13) Explain the reasons for each of the following
- a) Carrots are good for you. **(2 Marks)**
 - b) A person who has been sun bathing all day eats a salt tablet. **(2 Marks)**
 - c) A mother gives her child an orange juice **(2 Marks)**

Answer

- a) Carrots are good sources of vitamin A needed for synthesis of rhodopsin a pigment essential for our sight.

It maintains healthy teeth, skeletal and soft tissues, mucus membranes and skin.

b) Because during sun bathing, a person loses salt excessively. He eats salt tablet to replace the lost salt from the body.

c) Because orange juice rich in vitamin C which maintains:
Maintains the health of tissues and blood vessels
Promotes healing of wounds.

14) Here are some of the main types of chemical substances we need in our diet. **(4 Marks)**

- 1) Carbohydrates
- 2) Proteins
- 3) Water
- 4) Fats

Match them up with the following functions they do in our bodies.

- a) Make up most of the mass of our bodies
- b) Heat insulation in the skin
- c) Main source of energy in respiration
- d) Needed for growth and repair of cells and tissues.

Answer

- | | | |
|-----|---|-----|
| (1) | → | (c) |
| (2) | → | (d) |
| (3) | → | (a) |
| (4) | → | (b) |

15) Suggest a nutritional advice to an obese person. **(4 Marks)**

Answer

The advice should include:

- The feeding habits such as minimising the amount of carbohydrates, proteins and fats in the diet and increase vitamins rich foods.
Changing life style such as carrying out daily physical exercise, and increase the eating interval.

16) Assume you are appointed as a medical doctor of AMAVUBI football national team. Compose a presentation on maintaining a health skeletal system of your players. **(10 Marks)**

Answer

The following are the key area the students has to focus on:

- Engaging in regular exercises such as walking, jogging, climbing stairs, cycling among others. These physical activities cause new bone tissue to form. This makes bones stronger.
- Eating a healthy diet rich in calcium, manganese, phosphorous, zinc and copper.
- Getting at least 8 hours of sleep every night. Sufficient sleep is important to bone health because the body repairs broken tissues during sleep.
- Avoiding smoking and drinking alcohol. These make bones weak and brittle by depleting their calcium content.
- Drinking water at least 8 glasses of clean water every day. Hydration is important in maintaining healthy bones.
Avoiding excessive amounts of salt, carbonated drinks, caffeine and hydrogenated oils. They are known to diminish calcium content in bones.

17) What is the importance of the following hormones during menstrual cycle? **(4 Marks)**

- a) Progesterone
- b) Follicle Stimulating Hormone
- c) Luteinizing hormone
- d) Oestrogen

Answer

Progesterone maintains the endometrium

FSH stimulates development of egg cells (ova).

LH brings about ovulation.

Oestrogen Prepares /thicken the endometrium for pregnancy

17) Describe secondary physical characteristics in female and males **(6 Marks)**

Answer

Female secondary physical characteristics

1. Growth and development of the breast.
2. Growth of pubic hairs/ Increase in sex size
3. Widening of hips

Male secondary physical characteristics

1. Enlargement of shoulders
2. Enlargement of chest

3. Enlargement of penis and testis/ Growth of pubic hairs

19) Suggest causes of early pregnancies among adolescents? **(6 Marks)**

Answer

causes of school pregnancies:

- poverty(money)
- ignorance
- peer pressure
- Inducing gifts, e.g. telephones, money etc.
- use of drugs
- taking of alcohol
- lust

20) a) Why is urine used to test for pregnancy ? **(3 Marks)**

Answer

Implanted embryos produce the hormone called HCG(Human Chorionic Gonadotropin) which maintains pregnancy and excess of it is excreted in urine as waste product.

b) Why is it not advisable for expectant mother to smoke and take alcohol? **(4 Marks)**

Answer

Drinking alcohol, smoking or taking drugs during pregnancy can affect your child's health

Smoking and getting drunk, can lead to:

- A miscarriage in the early stages of pregnancy.
- Premature birth
- Low birth weight
- Breathing problems and wheezing in the first six months of life
- Impacting on the physical and mental development of the child, a condition known as Foetal Alcohol Syndrome (FAS)

End !!!!

BIOLOGY
Alternative to practical

Date: 30/June/2022

Period: 8H30' - 9H30'



END OF TERM III EXAMINATIONS

LEVEL: Senior One

DURATION: 1 HOUR

MARKS:

..... /15

INSTRUCTIONS

1. This question is compulsory
2. Don't open this question paper until you are told to do so`.
3. Read each question carefully before answering it.
4. Use only a **blue** or black **pen**

Alternative to practical

(15 Marks)

- 1) Supposing you are given solutions of food substance suspected to contain, carbohydrates(starch, glucose, sucrose) Protein and fats (lipids) Describe experiments you can carry out on each to confirm their presence, indicating procedure and expected observation **(15 Marks)**

End !!!!

Biology senior one marking schemes

Alternative to practical

Time: 1 hour

- 1) Supposing you are given solutions of food substance suspected to contain, carbohydrates(starch, glucose, sucrose), Protein and fats (lipids) Describe experiments you can carry out on each to confirm their presence, indicating procedure and expected observation **(15 Marks)**

Expected answers

Carbohydrates:

Starch: to 1 cm³ of the food solution in a test tube add 3 drops of iodine solution.

Expected observation:

- The colour of the test tube solution changes to blue black if starch is presented
- The colour of the test tube solution turn brown if starch is absent

Glucose: To 1cm³ of food solution in a test tube add 1cm³ of benedicts solution and boil

Expected observation: Brown precipitate will form if glucose is present. The test tube solution will remain blue if glucose is absent.

Sucrose: To 2 cm³ of food solution in a test tube, add 1cm³ of dilute hydrochloric acid and boil cool under water and add 1cm³ of sodium hydroxide solution.

Add 2cm³ of benedicts solution and boil.

The food solution in a test tube turns blue on adding benedicts solution and on boiling it turns into green, yellow, orange, and brawn precipitate if sucrose is present.

If absent the test tube solution remains blue.

(5 Marks)

Proteins

Use biuret test. ie copper II sulphate solution and sodium hydroxide solution

To 2cm³ of food solution in a test tube add 2 cm³ of sodium hydroxide solution, then 3-4 drops of copper II sulphate solution and shake.

If proteins are present solution turns to purple

If absent the solution remain blues

(5 Marks)

Fats/ Lipids:

Use emulsion test(Ethanol and Distilled water)

To 2 cm³ of food solution in attest tube, add 2 cm³ of ethanol and shake vigorously, add 2 cm³ of distilled water

If fats/ lipids are present

A white emulsion is formed/ milky suspension is formed/ a turbid mass is formed

If absent the solution remains clear.

(5 Marks)

End !!!!