



EXCEL IN NEW CIRRICULUM BIOLOGY FOR “O” LEVEL.

“NO REGRET IF EDUCATION IS IVESTED IN”

WASSWA ELVIS

ALWAYS HAVE TIME FOR GOD AND YOUR STUDIES TO BECOME
SUCCESSFUL.

ARRIVED BIOLOGY EXCEL 2025

UCE BIOLOGY PAPER 1 FORMAT([553/1])

ITEM	ELEMENT OF CONSTRUCT	THEMES/TOPICS/SUB-TOPICS
ITEM 1	-Understands how plants obtain and use nutrients to meet their requirements during which raw materials and products are carried to and from various organs involved and different plant processes that occur.	-PLANT CELLS -NUTRITION IN GREEN PLANTS -TRANSPORT IN GREEN PLANTS -RESPIRATION IN PLANTS -GROWTH IN PLANTS
ITEM 2	-Appreciates how the human body is coordinating various activities to ensure normal functioning of the different body systems.	-CHEMICAL COORDINATION IN HUMANS. -NERVOUS COORDINATION IN HUMANS. -RECEPTOR ORGANS IN MAN. -LOCOMOTION IN MAMMALS.
ITEM 3	-Appreciates how characteristics are inherited in living organisms, passed to generations through reproduction and are manifested as organisms grow up or develop.	-CELL DIVISION. -INHERITANCE. -VARIATION AND SELECTION. -SEXUAL REPRODUCTION IN PLANTS AND HUMANS. -GROWTH AND DEVELOPMENT IN PLANTS AND HUMANS.
ITEM 4 & 5 (SECTION B PART 1)	-Understand the diversity of living organisms and sustainability of natural resources.	-DIVERSITY OF LIVING THINGS. -SOIL. -ECOLOGY/INTERRELATIONS.
ITEM 5 & 6 (SECTION B PART 2)	-Understand how mammals obtain and use nutrients to meet their energy requirements during which raw materials and products are carried to and from various organs involved.	-NUTRITION IN ANIMALS. -TRANSPORT IN ANIMALS. -GASEOUS EXCHANGE IN MAMMALS -RESPIRATION IN ANIMALS. -EXCRETION IN ANIMALS. -GROWTH AND DEVELOPMENT IN ANIMALS.

NOTE:

1-The Biology paper consists of **seven (7) items** where **by section A is compulsory** and the **ITEM TAKER** is expected by the examiner to answer all items in section A.

2-Section B consist of two (2) parts ie part 1 and 2 but the ITEM TAKER is supposed to attempt ONE item from each but it contains four (4) items in total where by each part contains two items and so in total the ITEM TAKER attempts **FIVE ITEMS** from the paper.

SET 1

SECTION A (ATTEMPT ALL ITEMS)

ITEM 1

A fire in a forest killed most plants except a few trees. After some weeks plants started to grow again, and after a year the community was the same after before.

Task

- Identify the plant structures that were severely damaged by the fire.
- Explain how the normal functioning of the plants was affected by the fire leading to death of most plants.
- How did some plants manage to grow a few weeks ago?

ITEM 2

One day while walking to the garden, Mr Bogere a 60-year-old man saw a fierce dog about to attack him, he got a stick raised his arm and strongly hit it on the head and it ran away. Mr Bogere wanted to run after the dog, but he could not due to bone pain and he had previously had frequent fractures.

Task

- Identify the health disorders Mr Bogere is suffering from and the possible causes.
- Explain how Mr Bogere's body worked together to bring about the reaction from the time he saw the dog up to when the upper arm muscles enabled him to hit the dog.
- Suggest how Mr Bogere can overcome the challenges of the disorder.

ITEM 3

Mary a 14- year-old girl got pregnant for a rich man in an attempt to produce a boy for so that he succeeds his father's wealth. Two months later he visited a health centre and asked the doctor **"whether her baby will be a boy"**, the Doctor replied saying **"Not sure but the chance is 50%"**. The Doctor also advised her to visit the health centre in order to maintain her good health and that of the feotus(baby) because she was too young.

Task

- Identify the health challenges Mary is likely to face as a result of her condition in relation to her age.
- The Doctor replied and said **"Not sure, the chance is 50%"**. Clearly explain the statement to Mary.
- Suggest the significance of the Doctor's advice (why the doctor advised Mary like that).

"Answer All the Items in this Section in order to attain scores"

SECTION B

PART 1

Answer one item from this part.

ITEM 4

In a village in Busoga region, an investor has constructed a cooking oil producing factory on the lake shores so he is closer to farmers producing the raw materials for cooking oil. The factory releases large amounts of liquid oily wastes in to the lake twice a week and most local fish mongers lost their jobs and have attributed this to the challenges the factory imposes on the life in the lake.

TASK

- a) Explain to the locals the challenges the factory may be imposing to life in the lake.
- b) Advise the community on the ways to minimise the effects of the and show them the value of conserving such a natural resource.

ITEM 5

Part of a natural forest in Mityana District has been given to an investor who has constructed a plastic recycling factory. During the recycling process, the plastics are burnt into a liquid so as to reshape it into new useful plastic products. The District Environmental Committee held a talk show to sensitise the public about what was happening. One of the presenters was quoted saying “**With the health and environmental challenges faced so far, we need to mind where to establish such factories**”. The listeners need more explanation of what the presenter said.

TASK

- a) Explain to the listeners the challenges that the presenter talked about and how their impacts on the environment can be minimised. Explain why such areas of the environment should be protected.

PART 2

Answer one item from this part.

ITEM 6

Mr Nsamba is a farmer in one of the villages that are known for commercial farming. In one morning, he decided to eat a cup of **wheat porridge** which contained **some milk** and he also ate **two (2) tosses of bread** that were smeared with **blue band** before going for his farming activities. After thirty (30) minutes, Mr Nsamba felt his body was energised enough and then he went for his farming activities. However, when he started digging rapidly, His breathing rate increased and his heart beat increased and he sweat to his clothes becoming wet.

TASK

- a) Explain how the meal consumed Mr Nsamba in the morning helped him acquire energy for his farming activities.
- b) Explain why Mr Nsamba's breathing rate and heart beat increased when he started digging rapidly and why he sweat to his clothes turning wet.

ITEM 7

Recently a Caleb a volleyballer started smoking cigarette because of some of his friends who also smoke. Caleb often feels short of breath during training and he has started coughing. He has worried about his decline in sports performance and isn't sure that the challenges are as a result of smoking.

TASK

Show how his life style is responsible for the challenges experienced in his body leading to a decline in his sports performance. Suggest how he can regain his performance.

END OF SET 1 BIOLOGY PAPER.

SET 2
SECTION A (ATTEMPT ALL ITEMS)

ITEM 1

Mr Kalungi discovered strange moth species in his maize garden which was just beginning to flower. He observed that the moths were laying eggs inside the enclosed flowers and beneath the leaves. The larvae of these moths were found to feed on many parts of the plants, including boring through the stem. Mr Kalungi was advised to consider changing crops grown, none the less, his maize managed to give some yields.

TASK

- a) Identify the plant structures that were damaged in Mr Kalungi's garden.
- b) How did the activities of the moths affect the normal functioning of Mr Kalungi's maize?
- c) Explain how Mr Kalungi's Maize finally managed to give some yields.

ITEM 2

In one of the villages in Buganda a young mother named Nalongo is an alcohol addict. One day, while drunk she attempted to prepare lunch for her family but accidentally left the cooking fire unattended to. The fire quickly spread, engulfing the kitchen and threatening to burn down the main house. Fortunately, her neighbour, Nakato noticed the thick smoke and rushed to her aid, extinguishing the fire just in time.

TASK

- a) Explain how Nakato's body coordinated to bring about her reactions from the time she noticed the smoke until she reached to Nalongo's kitchen.
- b) What are the likely effects of Nalongo's life style?
- c) Explain how Nalongo can recover from her life style to live a productive life?

ITEM 3

Two sisters of ages 15 and 16, have **same biological parents** and were brought up under **same conditions** in the same home. The 15- year-old sister is **much taller than the 16- year -old sister** and one time a **Geneticist** explained to them the possible cause. Later one of them got married, and after giving birth to the first son, she wanted to space him for 4-years "**four years without pregnancy**" so as he got enough attention, so she went to the **Doctor** and she was advised on the various ways this could be possible.

TASK

- a) Explain the possible causes of the difference in the height of the two sisters **geneticist** explained.
- b) Suggest any three ways the doctor could have highlighted and show each prevent **unwanted pregnancy**.

- c) Arrange the given methods in order of increasing **effectiveness**.

SECTION B

PART 1

Answer one item from this part.

ITEM 4

The Public Health officer, Hoima has observed significant water pollution in Lake Albert and nearby water sources due oil refinery and industrial activities. In addition, the local community has been experiencing an outbreak of malaria and bilharzia with many cases reported among children and fisher men.

TASK

- a) What are the effects of the activities being done around the lake? Suggest control measures to mitigate the effects and disease outbreak.

ITEM 5

Environment conservationists are against the use of pesticides and inorganic fertilizers while farmers are in favour of their use in order to get more crop yields and food for the increasing human and animal population.

TASK

- a) Explain to the farmers the environmental challenges that their practises impose on the terrestrial and aquatic ecosystems and show the ways these challenges can be minimized. Show the value of using organic fertilizers by the farmers.

PART 2

Answer one item from this part.

ITEM 6

After 20 years of engaging in alcohol drinking Mr Kavuma went to a health centre due to health complications and examinations revealed that his liver has been potentially damaged, hi pancreatic duct was blocked and he also had increased blood pressure.

TASK

- a) Break down to Mr Kavuma his body processes affected so that he knows how the normal functioning his body was damaged. Also explain to Mr Kavuma how he can be able to live a normal life.

ITEM 7

Asuman, a 17-year- old **Item Taker** was experiencing general body weakness and was scared that he may not participate in the school inter-house football competitions. He was advised by his best friend **Janet** to **eat first before playing any match due the much Biology she knows** which he did so by **eating a meal of posho and unfried school beans**. After resting for

about an hour, Asuman felt **stronger** and he even **managed to score 2 goals in every match** for his senior four class (s.4) in which he is. However, after the matches Asuman **muscle pain** causing him to walk with difficulty.

TASK

- a) Describe the process that led to Asuman's success and how it helped him have success with explanations as to why was feeling muscle pain after the matches.

END OF SET 2 BIOLOGY PAPER.

SET 3

SECTION A (ATTEMPT ALL ITEMS)

ITEM 1

Mr Kyeyune is a biology teacher at Budo Secondary School. He organised a Work shop for Senior Three students and their parents to illustrate to parents how students in the competence-based curriculum discuss in class and it was about how plants are important in our community and all students were tasked to involve in discussions and participation but unfortunately on that day Mr Kyeyune was attacked by a strange disease and so he was unable to present.

TASK

- a) You have been requested by Mr Kyeyune to present to the Senior three students and their parents and he has tasked you to present to them the following in your presentation;
 - i. Raw materials of photosynthesis.
 - ii. Requirements of photosynthesis and why plants are able to photosynthesize.
 - iii. Site for photosynthesis in plants and finally the importance of photosynthesis reflected in the presence of trees in the home community.

ITEM 2

Cissy is a senior four Item Taker at Buddo Secondary School who is very bright in class. However, when she sits on the front row near the chalk board, she cannot see the writings on the chalk board, and she complains of pain in her eyes when she strains them to see in the work in her books. The teachers tried to take her to the back seats in the class, but she was too short to see the chalk board behind the other talk students because their class had a lot of groups.

TASK

- a) Using scientific facts, as the health prefect, explain Cissy's problem to her parents.
- b) Explain the cause of the problem.
- c) Using illustrations, clearly explain to the parents how Cissy's problem can be managed.

ITEM 3

Faith was a Secondary School girl, studying in a day school near her home. As a result of bad peer groups, she started drinking alcohol and dodging school. One day, during the school routine pregnancy checks, Faith was found pregnant and so she was sent out of school.

She was forced to marry her young boy friend by her parents; however, she continued with her habits and did not attend antenatal care. Faith and her boyfriend are dark-skinned; however, she gave birth to an albino child. The

boyfriend denied the child and ran away, so Faith started to solely take care of the baby. Faith tried to convince the boyfriend but he hardly refused.

TASK

- Convince Faith's boyfriend that it's scientifically possible that he is the father of the albino child.
- What are the likely effects of Faith's life style to the fetus/ baby?
- Advise Faith on how she can improve her living conditions.

SECTION B

PART 1

Answer one item from this part.

ITEM 4

A chemical factor was established in a **swamp** which had a flowing river, supporting nearby communities with water and mad fish. The water in the river stream became **greenish**, and there was a lot of growth of water **hyacinth (water weed)** in the river. The mad fish harvests have greatly **dwindled** and many community members were **diagnosed (tested)** with **respiratory diseases**. The community members have recorded serious complaints with the local leaders.

TASK

- Explain to the local leaders the problems in the community, suggest the possible solutions and show how the swamp should be kept in natural state.

ITEM 5

As a result of a civil war in one of the countries neighbouring Uganda, many people entered the country as refugees. These people settled themselves in a game reserve of a border district, part of which had a forest reserve. A refugee camp was set up, but the area later became too small for the refugees. There were many cases of wild animals attacking the refugees and the refugee community faced a number of challenges. The local leadership is very concerned.

TASK

- Justify (explain) the refugee community their problems, give advice and sensitize them on the value of conserving the natural environment in the area.

PART 2

Answer one item from this part.

ITEM 6

Mr Male a **sixty-year-old** man **urinates frequently**, has **blurred vision** and **feels thirsty** oftenly, when he visited a **physiologist**, the doctor recommended for **urinalysis test** for **proper diagnosis**. The clinical

laboratory technician obtained **specimen solution P** from Mr Male, which gave a positive test with **Benedict's solution**.

TASK

- Explain how **specimen solution P** formed in side Mr Male's body, identify his major **metabolic disorder** and suggest **how he can overcome it**.

ITEM 7

During his visit in January, Moses a **five-year -old** boy was found to be having **wasted muscles**, not **physically active**, **had wounds on his legs** and was **generally weak**. The Doctor **recommended that Moses** should be is started on a special diet mainly consisting of **millet porridge** and milk for some time.

His condition has since then improved and from the **hospital records** about his **weight** is as shown in **Table 1**

Table 1: shows changes in Moses's body weight since his first visit to the hospital.

MONTH	WEIGHT (Kg)
January	10.9
March	11.8
May	13.5
July	14.5
September	15.7

The **normal weigh range** of boys is shown in **Table 2**

Table 2: Shows normal weight range of boys between 2 to 7 years.

AGE	WEIGHT(Kg)
2	8.9 - 15
3	11.9 - 17.9
4	13.4 - 20.4
5	15.2 - 24.4
6	16.9 - 26.5
7	18.6 - 31.5

TASK

- How was the Doctor's re commendation utilised by Moses's body to help in the improvement of his health condition?

END OF SET 3 BIOLOGY PAPER.

SET 4
SECTION A (ATTEMPT ALL ITEMS)

ITEM 1

Mr Kabuki a farmer in Mayuge district who grows **maize and soya beans** at his farm has got significantly **lower yields** in the recent season than expected. Near his farm, there is a **stone quarry** and its activities produce frequent **dust storms** and **some stones** from the quarry **hit his plants, crack** and even **break their stems**. He has sued the quarrying company that it should compensate him for the **low yields obtained**.

TASK

- a) Identify the plant processes the activities of the quarry affected.
- b) Explain to the quarrying company management how their activities led to the low yields in Mr Kabuki's Garden.
- c) How did some plants manage to give some yields in the same area?

ITEM 2

A house maid was cooking milk for the baby and suddenly the boiling milk raised and spilled out of the saucepan into the fire. The maid **heard the hissing sound** from the cooking place. She got scared, **heart beat** and **breathing rate increased** and she strongly **rushed** to remove the saucepan from the stove. On touching the saucepan, she immediately **released it**.



TASK

- a) What **physiological changes** occurred in the maid's body?
- b) Describe how the maid's **coordinated** to bring about her reactions from the time the **milk spilled out of the saucepan** up to when she started **rushing towards the cooking place**.
- c) Explain what happened in the maid's body so as to **withdraw her hands** from the saucepan

ITEM 3

In a certain family, a **paternity** dispute has risen between a man, Mr Kabuusu, and a woman, Ms Ndagire, over their two-year-old child. **Mr Kabuusu** denies being the biological father of the child since they have different blood groups, while Ms Ndagire claims he is the right father. The **child's blood type** is **AB**, while **Ms Ndagire's** blood type is **O**. Mr Kabuusu's blood type is **A**. Recently, the child was

diagnosed with a **bleeder's disease** after **an injury**, where he even needed **blood transfusion**.

TASK

- a) Clearly show to Mr Kabuusu the possibility of him being the father of the two-year-old basing on the **biological facts of blood groups**.
- b) What are the likely **effects of the disease discovered** in the 2-year-old child?
- c) Advise the couple on how a **successful blood transfusion** of their child can be done.

SECTION B

PART 1

Answer one item from this part.

ITEM 4

OilTech Corporation has discovered significant oil reserves in Murchison falls National Park, near Lake Albert in Western Uganda. The company plans to extract the oil and construct a refinery nearby, generating employment opportunities to the people and revenue for the government.

However, environmentalists and local communities are concerned about the potential risks to the eco-systems in the area.

TASK

- a) Explain the problems associated with oil extraction activities in an area to the community. Suggest possible solutions and show the value of living the eco-systems in an area undisturbed.

ITEM 5

Charcoal burning is one of the commonest economic activities carried out by the people of Kibuku district. During the practice people cut down trees on a large scale and gather pieces in heaps of soil through which fire is put to facilitate the process. However, this practice is threatening the quality of the environment a thing that many residents are afraid of.

TASK

- a) Explain the environmental problems this practice has caused; suggest ways these problems can be minimised and explain to the community why they should conserve the forests.

PART 2

Answer one item from this part.

ITEM 6

Kibilango's **three-year-old son** was attacked by **fever** that resulted into **breathing difficulties, vomiting and diarrhoea**. The boy was rushed to the hospital and immediately some **injections** were given to him and **breathing normalised**. Further tests revealed that the boy did not have **enough blood**. **Compatible blood was added to the body** and the doctor and the doctor advised Kibilango to **feed the boy** on a meal containing **proteins and iron**. After one month in the hospital Kibilango's son recovered completely from the disease.

TASK

- a) Explain how the body of Kibilango's son responded to the actions of the doctor and how the boy's body regained its normal functioning.

ITEM 7

The hygienist observed discoloured teeth in a 46-year-old man called Kavuma. Kavuma has history of smoking tobacco for the past 25 years in Senior two. He has painful gums, shallow respiration and has signs of developing stroke.

The table below shows more results of physical examination on Kavuma.

ASPECTS CONSIDERED	KAVUMA'S VALUES	NORMAL RANGE
Breathing Rate	28 breathes per min	12 - 18 breathes per min
Heart Rate	140 beats per min	60 - 100 beats per min
Blood Pressure	160/98	Systolic pressure (100-120) mmHg Diastolic pressure (60 - 80) mmHg

TASK

- a) Identify the affected body organs of Mr Kavuma and explain how Mr Kavuma's lifestyle affected the normal functioning of his body. Suggest possible measures to restore Mr Kavuma's life back.

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