SECTION A
ELEMENT OF CONSTRUCT TWO

How plants obtain and use nutrients to meet their energy requirements during which raw materials and products are carried to and from various organs.

PLANT BIOLOGY ITEMS

ITEM 1

In Kasese, a student group from St. Theresa Secondary School planted maize as a school project. During the growing season, they experienced poor rains, high temperatures, and frequent strong winds. The maize leaves curled up during the day and developed a dull green color. Some plants had short stems with few leaves. Later, they applied compost manure and watered the plants using watering cans. Eventually, a few maize plants grew taller and formed small cobs.

Task

(a) Explain how the following affected the maize plants:

(i) High temperature and wind

(ii) Inadequate rainfall

(b) Describe how the maize plants recovered and managed to form small cobs.

ITEM 2

In Kabale, farmer Akim planted bananas in a field near a rocky slope. During the rainy season, heavy rains caused soil erosion, washing away topsoil and exposing roots. Some banana suckers were physically damaged, while others developed weak yellow leaves and short pseudostems. Weevils also attacked the roots of some banana plants. After the rainy season, Akim added mulch and organic matter. A few banana plants recovered and produced small bunches.

Task

(a) Explain how the following affected the banana plants:

(i) Soil erosion and root exposure

(ii) Weevil attack

(b) Describe how the banana plants survived and eventually formed small banana bunches.

ITEM 3

At a school demonstration garden in Tororo, students planted cassava using cuttings. A prolonged dry season followed, with limited rainfall and intense sunlight. The cassava cuttings had few leaves, some wilted, and others failed to grow. Termites also damaged several cuttings underground. However, some cuttings that were planted in shaded areas began to sprout when light rains returned. These later developed new leaves and thicker stems.

Task

(a) Describe how the following affected the cassava plants:

(i) Prolonged drought

(ii) Termite attack

(b) Explain how the cassava plants survived and developed after the return of light rains.

ITEM 4

In Mityana, farmer Rose planted beans in her garden. During the wet season, the soil became waterlogged, and the leaves of the bean plants turned yellow. Some plants showed poor flowering, and the stems became soft and weak. Aphids also infested the plants, sucking sap from the soft parts. After the rains, Rose drained the field and applied wood ash to the aphid-infested plants. Some beans recovered and produced a small harvest.

Task

(a) Explain how the following affected the bean plants:

(i) Waterlogging

(ii) Aphid infestation

(b) Describe how the bean plants recovered and managed to yield after drainage and ash application.

ITEM 5

In Arua, a school agricultural club grew sunflower in an open field. Midway through the season, locusts invaded the region and fed on leaves and stem tips. Shortly after, the region experienced dry winds and high day temperatures. Most plants became stunted with

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small flower heads, and many leaves dried up. However, a few plants survived, grew new leaves and flowered after rains returned and the locusts left.

Task

(a) Explain how the following affected the sunflower plants:

(i) Locust attack

(ii) Dry winds and high temperatures

(b) Describe how the sunflower plants recovered and managed to flower after the rains.

ITEM 6

In Luwero, farmer Nalongo planted tomatoes in her backyard garden. During the growing season, heavy rains caused continuous flooding, while whiteflies infested the tomato leaves. The leaves turned yellow, and the stems softened. Some fruits dropped before ripening. Nalongo then removed the infested plants, improved drainage, and replanted some cuttings. The new plants grew upright and produced fewer but healthier fruits.

Task

(a) Describe how the following affected the tomato plants

(i) Flooding

(ii) Whitefly infestation

(b) Explain how the tomato plants managed to recover and produce fruits after intervention.

ITEM 7

In Bushenyi, a school agriculture project involved growing passion fruit. The vines were supported on wires, but the field was close to a dusty road and had limited rainfall. Dust settled on the leaves, blocking stomata. The vines developed pale green leaves and few flowers. Thrips also damaged the flowers. Later, the students mulched the garden and watered it regularly. Some vines revived and started producing purple fruits.

Task

(a) Explain how the following affected the passion fruit plants:

(i) Dust and limited rainfall

(ii) Thrip damage

(b) Describe how the vines recovered and managed to produce fruits after regular care.

ITEM 8

In Hoima, farmer Muwanga planted sugarcane on a large piece of land. A fire outbreak during the dry season burnt the older leaves and outer stem tissues of many sugarcane plants. The region also had high daytime temperatures and no rainfall for several weeks. However, some sugarcane stalks with underground nodes later sprouted again when rains resumed. These plants grew new shoots and developed strong stems.

Task

(a) Explain how the following affected the sugarcane plants:

(i) Fire damage

(ii) High temperature and drought

(b) Describe how the sugarcane plants managed to regenerate and grow after the rains.

ITEM 9

In Mukono, a group of young farmers grew yams in a wetland area. During the early stages of growth, snails attacked the yam leaves at night, eating large portions of them. The region also experienced unusually low temperatures. The yams developed soft stems, slow growth, and fewer tubers. After applying ash and hand-picking the snails, and as temperatures increased, the plants improved and started forming more tubers.

Task

(a) Explain how the following affected the yam plants:

(i) Snail attack

(ii) Low temperature

(b) Describe how the yam plants survived and later formed tubers.

ITEM 10

In Gulu, farmer Ayaa grew okra on sandy soil. During the dry season, strong hot winds blew across the garden, and termites attacked the lower stems. The okra leaves curled and dropped, and the plants became weak and stunted. After applying cow dung to enrich the soil and spraying termite repellents, some plants

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developed new leaves and managed to form small pods.

Task

(a) Explain how the following affected the okra plants:

(i) Sandy soil and strong winds

(ii) Termite attack

(b) Describe how the okra plants survived and produced pods after soil improvement and pest control.

ITEM 11

In Masaka, students in an agricultural club planted pawpaw trees. However, the area experienced a dry season with high daytime temperatures and very little rainfall. Some plants had leaves that turned brown and dropped. Mealybugs attacked the stems and leaves. The affected trees had short internodes and produced small, unripe fruits. After spraying the pests and watering the garden regularly, the plants grew taller and bore larger fruits.

Task

(a) Explain how the following affected the pawpaw plants:

(i) Drought and high temperature

(ii) Mealybug infestation

(b) Describe how the pawpaw plants recovered and produced fruits after pest control and watering.

ITEM 12

In Mityana, farmer Okello grows maize on his small farm. During a prolonged dry season, his maize plants faced high temperatures, strong winds, and an infestation of armyworms that ate leaves and stems. The plants showed drooping leaves, small cobs, and some had wilted completely. Okello noticed that early morning dew helped some plants recover slightly, but his yields were much lower than his neighbor's irrigated field.

Task:

(a) Explain how the following affected Okello's maize plants, leading to poor yields:

(i) High temperatures

(ii) Strong winds

(iii) Armyworm infestation

(b) Describe how the maize plants managed to produce some cobs despite these challenges.

ITEM 13

In Gulu, farmer Auma cultivates beans near a riverbank. Heavy rains caused waterlogging, locusts attacked the leaves, and dense weeds blocked sunlight. Her bean plants had yellow leaves, stunted growth, and few pods, with some plants wilting. After the rains reduced, Auma propagated new plants from seeds, and some produced pods, though yields were lower than nearby farms.

Task:

(a) Explain how the following affected Auma's bean plants:

(i) Waterlogging

(ii) Locust attack

(iii) Dense weeds

(b) Describe how the bean plants recovered to produce some pods.

ITEM 13

In Kabale, farmer Byamukama grows cabbages on a hilly farm. A dry season brought intense sunlight, dry winds, and an outbreak of aphids that sucked sap from stems. His cabbages had small, pale heads, drooping leaves, and some plants stopped growing. When cooler weather arrived, some cabbages revived, producing small heads, though yields were lower than unshaded farms.

Task:

(a) Explain how the following affected Byamukama's cabbages:

(i) Intense sunlight

(ii) Dry winds

(iii) Aphid outbreak

(b) Describe how the cabbages managed to produce some heads.

ITEM 14

In Lira, farmer Adongo plants millet in a low-lying area. During a wet season, flooding occurred, caterpillars ate the leaves, and thick cloud cover reduced sunlight. Her millet plants showed yellowing leaves, weak stems, and few grains, with some plants rotting at the roots. After the floods subsided, Adongo used stem

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cuttings for propagation, and some plants produced grains, though yields were poor compared to upland farms.

Task:

(a) Explain how the following affected Adongo's millet plants:

(i) Flooding

(ii) Caterpillar damage

(iii) Thick cloud cover

(b) Describe how the millet plants produced some grains after propagation.

ITEM 15

In Masaka, Farmer Nankya Grows Tomatoes On Her Farm. A Season Of Heavy Winds, Locust Swarms, and low temperatures slowed plant growth. Her tomatoes had drooping leaves, small fruits, and some plants were stunted due to pest damage. When conditions improved, some plants recovered, producing small tomatoes, but yields were lower than farms with better conditions.

Task:

(a) Explain how the following affected Nankya's tomato plants:

(i) Heavy winds

(ii) Locust swarms

(iii) Low temperatures

(b) Describe how the tomato plants managed to produce some fruits

ITEM 16

In Arua, farmer Okumu grows cowpeas on his small farm near a forest. During a hot, dry season, his cowpea plants faced intense heat, aphid infestations, and sandy soil erosion from strong winds. The plants had drooping leaves, small pods, and some wilted completely. Early morning moisture and reduced aphid numbers helped some plants recover slightly, but Okumu's yields were lower than those of farmers with irrigated fields.

Task:

(a) Explain how the following affected Okumu's cowpea plants, leading to poor yields:

(i) Intense heat

(ii) Aphid infestation

(iii) Soil erosion from winds

(b) Describe how the cowpea plants managed to produce some pods despite these challenges.

ITEM 17

In Masindi, farmer Akello cultivates sunflowers in a low-lying field. Heavy rainfall caused flooding, caterpillars chewed the leaves, and thick clouds reduced sunlight. Her sunflower plants showed yellowing leaves, weak stems, and few flower heads, with some roots rotting. When the rains eased, Akello propagated new plants from seeds, and some produced small flower heads, though yields were lower than upland farms.

Task:

(a) Explain how the following affected Akello's sunflower plants:

(i) Flooding

(ii) Caterpillar damage

(iii) Reduced sunlight

(b) Describe how the sunflower plants recovered to produce some flower heads.

ITEM 18

In Mukono, farmer Namutebi grows eggplants on a hilly farm. A dry season brought strong winds, locust swarms, and high temperatures, causing her eggplants to have drooping leaves, small fruits, and stunted growth. Some plants wilted entirely. Cooler evenings and reduced pest activity allowed some recovery, producing small fruits, but yields were lower than farms with better conditions.

TASK:

(a) Explain how the following affected Namutebi's eggplant plants:

(i) Strong winds

(ii) Locust swarms

(iii) High temperatures

(b) Describe how the eggplant plants managed to produce some fruits.

ITEM 19

In Lira, farmer Odongo plants sesame in a field near a swamp. During a wet season, waterlogging occurred, beetles ate the leaves, and dense weeds blocked sunlight. His sesame plants had pale leaves, weak stems, and few

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seeds, with some plants rotting at the roots. After the floods subsided, Odongo used stem cuttings for propagation, and some plants produced seeds, though yields were poor compared to drier farms.

Task:

(a) Explain how the following affected Odongo's sesame plants:

(i) Waterlogging

(ii) Beetle damage

(iii) Dense weeds

(b) Describe how the sesame plants produced some seeds after propagation.

ITEM 20

In Kabarole, farmer Byaruhanga grows green peppers on his farm. A season of low temperatures, aphid infestations, and heavy winds caused his pepper plants to have small, pale fruits, drooping leaves, and stunted growth. Some plants stopped growing entirely. When conditions improved, some plants recovered, producing small peppers, but yields were lower than farms with sheltered fields.

Task:

(a) Explain how the following affected Byaruhanga's green pepper plants:

(i) Low temperatures

(ii) Aphid infestations

(iii) Heavy winds

(b) Describe how the pepper plants managed to produce some fruits.

ITEM 21

In Kumi District, farmer Otim planted millet on a sloped hillside. During the rainy season, heavy rainfall caused surface runoff and soil erosion. This exposed some plant roots and washed away topsoil. Later, armyworms invaded the garden and fed on young millet shoots and leaves. The plants became stunted, with thin stems and few seed heads. After applying compost and hand-picking the worms, some millet plants grew new leaves and produced small heads with grains.

Task

(a) Explain how the following affected the millet plants:

(i) Soil erosion and root exposure

(ii) Armyworm infestation

(b) Describe how the millet plants managed to survive and form grains after control measures were taken.

ITEM 22

In Mbarara, a group of students planted sweet potatoes for a science project. The garden received very little rainfall, and the soil cracked. The vines had small, curled leaves, and some leaves turned brown and dry. Ants also attacked the underground storage roots. After the students irrigated the garden and added mulch, some vines recovered and formed larger storage roots.

Task

(a) Explain how the following affected the sweet potato plants:

(i) Dry soil and high temperature

(ii) Ant attack on storage roots

(b) Describe how the sweet potato plants managed to recover and produce roots after watering and mulching.

ITEM 23

In Iganga, farmer Zawedde grew cabbage in a garden near a rubbish dumping site. The soil was contaminated with plastics and other waste, making it hard and poor in nutrients. Flies laid eggs on the cabbages, and their larvae bored into the stems and leaves. The cabbage heads became deformed and smelly. After removing the waste, improving soil with compost, and spraying the flies, some plants formed smaller but healthy heads.

Task

(a) Describe how the following affected the cabbage plants:

(i) Contaminated soil and poor nutrient content

(ii) Larvae infestation

(b) Explain how the cabbage plants managed to recover and form heads after waste removal and spraying.

ITEM 24

In Tororo, a school garden planted climbing beans along wooden stakes. Mid-season, strong winds blew down some stakes, causing plants to bend and break. Later, fungal infections spread

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due to humid weather, causing black spots on leaves. Some plants dropped leaves early. The students tied the plants back and sprayed a fungicide. Afterward, some plants developed new leaves and produced pods.

Task

(a) Explain how the following affected the bean plants:

(i) Strong winds and physical damage

(ii) Fungal infection

(b) Describe how the beans managed to grow and produce pods after support and spraying.

ITEM 25

In Kalangala Islands, farmer Basudde grew pineapples in a field close to the lake. The area was often hit by salty lake winds. Salt accumulated in the soil, and water became less available to the plant roots. Additionally, moles damaged some underground roots. Many pineapple leaves turned yellow, and some fruits were underdeveloped. After applying organic matter and trapping the moles, some pineapple plants regained health and formed full-sized fruits.

Task

(a) Explain how the following affected the pineapple plants:

(i) Salty winds and soil

(ii) Mole damage to roots

(b) Describe how the pineapple plants survived and produced fruits after intervention.

ITEM 26

In Gulu, farmer David planted sesame in a low-lying field. During a wet season, waterlogging occurred, caterpillars ate the leaves, and thick clouds reduced sunlight. The sesame plants had pale leaves, few seeds, and weak stems. After the floods subsided, David used stem cuttings for propagation and removed caterpillars. Some plants produced seeds, but yields were poor compared to drier farms, causing concern for his family's food security.

Task:

(a) Explain how the following environmental challenges affected the sesame plants:

(i) Waterlogging

(ii) Caterpillar infestation

(iii) Reduced sunlight

(b) Describe how the sesame plants managed to produce some seeds after propagation.

ITEM 27

In Masaka, a women's group planted sweet potatoes in a community garden. During a dry season, low rainfall caused soil cracks, ants attacked the roots, and hot winds dried the leaves. The sweet potato vines had small, curled leaves and few tubers. After rains returned, the group mulched and used pest traps. Some vines produced tubers, but yields were lower than irrigated fields, disappointing the group.

Task:

(a) Explain how the following environmental challenges affected the sweet potato plants:

(i) Low rainfall

(ii) Ant infestation

(iii) Hot winds

(b) Describe how the sweet potato plants managed to produce some tubers despite these challenges.

ITEM 28

In Kabale, farmer Mary grew cabbages on a hilly farm. During a hot season, intense sunlight scorched the leaves, aphids sucked sap from stems, and dry winds increased evaporation. The cabbage plants had small heads, yellow leaves, and stunted growth. After cooler weather arrived, Mary watered the plants and applied ash to control aphids. Some plants produced small heads, but yields were lower than shaded farms, worrying her family about market sales.

Task:

(a) Explain how the following environmental challenges affected the cabbage plants:

(i) Intense sunlight

(ii) Aphid infestation

(iii) Dry winds

(b) Describe how the cabbage plants managed to produce some heads despite these challenges.

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ITEM 29

In Lira, a school agriculture club planted tomatoes in an open field. During a wet season, heavy rains caused flooding, whiteflies infested the leaves, and dense weeds blocked sunlight. The tomato plants had yellow leaves, small fruits, and weak stems. After the floods subsided, the students cleared weeds and sprayed the whiteflies. Some plants produced fruits, but yields were lower than upland farms, causing disappointment among the students.

Task:

(a) Explain how the following environmental challenges affected the tomato plants:

(i) Flooding

(ii) Whitefly infestation

(iii) Dense weeds

(b) Describe how the tomato plants managed to produce some fruits despite these challenges.

ITEM 30

In Mukono, farmer John grew millet in a field near a swamp. During a dry season, hot winds dried the soil, locusts ate the leaves, and heavy weeding caused nutrient loss. The millet plants had drooping leaves, small grains, and thin stems. After rains returned, John added compost and removed locusts. Some plants produced grains, but yields were lower than other farms, worrying his family about food security.

Task:

(a) Explain how the following environmental challenges affected the millet plants:

(i) Hot winds

(ii) Locust infestation

(iii) Nutrient loss from weeding

(b) Describe how the millet plants managed to produce some grains despite these challenges.

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ELEMENT OF CONSTRUCT FOUR

How the human body coordinates various activities and adjusts to ensure normal Functioning of the body.

COORDINATION, RECEPTOR ORGANDS AND LOCOMOTION

ITEM 1

In Lira, 17-year-old Sarah, a Senior 3 student, has been smoking cigarettes with friends after school, leading to frequent coughing and difficulty breathing during sports. One day, while running to catch a bus, she heard a loud car horn, causing her heart to race and her legs to cramp, making her stumble. Her teachers also noticed her struggling to read the chalkboard, affecting her class performance.

Task:

(a) Explain how the following affected Sarah's body:

(i) Cigarette smoking

(ii) Heart racing and leg cramps

(iii) Difficulty reading the chalkboard

(b) Suggest ways Sarah can manage her health challenges to improve her school performance.

ITEM 2

In Mbarara, 15-year-old Peter, a Primary 7 pupil, started drinking alcohol with older boys in his village, causing him to become aggressive and lose focus in class. During a school debate, he suddenly felt dizzy, his heart pounded, and his vision blurred, making him sit down abruptly. His aggressive behaviour worried his parents, who noticed his poor academic performance.

Task:

(a) Explain how the following affected Peter's body:

(i) Alcohol use

(ii) Dizziness and blurred vision

(iii) Heart pounding

(b) Suggest ways Peter can overcome his health challenges and improve his behavior.

ITEM 3

In Soroti, 16-year-old Auma, a Senior 4 student, was diagnosed with weak bones due to poor

diet, risking fractures. During a school dance practice, a loud drum sound startled her, causing her heart to race and hands to sweat. She tripped while dancing, spraining her ankle due to weak muscles and bones. Her classmates teased her for being clumsy, affecting her confidence.

Task:

(a) Explain how the following affected Auma's body:

(i) Weak bones from poor diet

(ii) Heart racing and sweating

(iii) Sprained ankle

(b) Suggest ways Auma can manage her health to stay active in school activities.

ITEM 4

In Kampala, 18-year-old Joseph, a football player, uses marijuana, leading to memory problems and slow reactions during matches. One day, while playing, he heard a loud whistle, causing his heart to pound and legs to cramp, making him fall. He also struggled to see the ball clearly from a distance, affecting his game performance and worrying his coach.

Task:

(a) Explain how the following affected Joseph's body:

(i) Marijuana use

(ii) Heart pounding and leg cramps

(iii) Poor vision during the match

(b) Suggest ways Joseph can manage his health to improve his football performance.

ITEM 5

In Mbale, 14-year-old Grace, a Primary 6 pupil, has been sniffing glue with street children, causing frequent headaches and tiredness. During a school race, a loud starting gun made her heart race and her hands tremble, leading to a fall and muscle cramps. Her parents noticed she struggles to hear teachers clearly, affecting her studies and worrying them about her health.

Task:

(a) Explain how the following affected Grace's body:

(i) Glue sniffing

(ii) Heart racing and trembling

(iii) Poor hearing

(b) Suggest ways Grace's parents can help her manage her health challenges.

ITEM 6

In Fort Portal, 16-year-old Jane, a Senior 2 student, has been drinking alcohol with friends after school, leading to frequent headaches and poor memory during lessons. One day, while fetching water from a well, she tripped on a stone, causing her heart to race and her legs to cramp, making her drop the jerrycan. Her teachers noticed she struggles to see the chalkboard clearly, affecting her grades, and her parents are worried about her behavior.

Task:

(a) Explain how the following affected Jane's body:

(i) Alcohol consumption

(ii) Heart racing and leg cramps

(iii) Difficulty seeing the chalkboard

(b) Suggest ways Jane can manage her health challenges to improve her school performance.

ITEM 7

In Arua, 15-year-old Michael, a Primary 7 pupil, was diagnosed with weak bones due to poor nutrition, making him prone to injuries. During a school play, a loud clap of thunder startled him, causing his heart to pound and hands to sweat. He slipped and twisted his ankle, unable to walk properly due to pain. His classmates teased him for being weak, lowering his confidence and school participation.

Task:

(a) Explain how the following affected Michael's body:

(i) Weak bones from poor nutrition

(ii) Heart pounding and sweating

(iii) Twisted ankle

(b) Suggest ways Michael can manage his health to stay active in school activities.

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ITEM 8

In Mbale, 17-year-old David, a Senior 3 football player, has been using khat (a stimulant), causing restlessness and difficulty focusing during matches. One day, while sprinting on the field, he heard a loud whistle, triggering rapid breathing and leg cramps, leading to a fall. He also struggles to hear the coach's instructions clearly, affecting his performance, and his team worries about his health.

Task:

(a) Explain how the following affected David's body:

(i) Khat use

(ii) Rapid breathing and leg cramps

(iii) Poor hearing

(b) Suggest ways David can manage his health to improve his football skills.

ITEM 9

In Soroti, 14-year-old Esther, a Primary 6 pupil, has been exposed to secondhand smoke from her uncle's cigarettes, causing frequent coughing and tiredness. During a school race, a loud starting gun made her heart race and her hands tremble, causing her to stumble. She also struggles to see distant objects, affecting her ability to copy notes, and her parents are concerned about her declining grades.

Task:

(a) Explain how the following affected Esther's body:

(i) Secondhand smoke exposure

(ii) Heart racing and trembling

(iii) Poor vision

(b) Suggest ways Esther's parents can help her manage her health challenges.

ITEM 10

In Gulu, 18-year-old Brian, a Senior 4 student and school prefect, has been chewing tobacco, leading to poor concentration and slow reactions during debates. One day, while climbing stairs, he tripped after a loud bang from a falling chair, causing his heart to pound and legs to cramp. He also finds it hard to read small text on the blackboard, affecting his leadership duties, and his teachers are worried about his health.

Task:

(a) Explain how the following affected Brian's body:

(i) Tobacco use

(ii) Heart pounding and leg cramps

(iii) Difficulty reading small text

(b) Suggest ways Brian can manage his health to improve his school leadership.

ITEM 11

Namugga, a 16-year-old girl in Wakiso, was diagnosed with hormonal imbalance and often had mood swings, heavy sweating, and irregular heartbeat. Her classmates noticed that she would suddenly get dizzy in class and sometimes faint. One day, after receiving news that her cousin had been arrested, her body shook, her eyes widened, and her heartbeat increased rapidly. Doctors explained that these were due to the body's response to stress.

TASK:

(a)(i) Describe how the endocrine system and specific hormones helped Namugga respond to the stressful news.

(ii) Explain how the brain and reflex action were involved in the sudden body response.

(d) Suggest how Namugga can manage stress and maintain hormonal balance.

ITEM 12

Moses, a 17-year-old football captain in Arua, experienced sudden pain in his thigh muscles during a school match. He tried to continue playing but later collapsed due to cramps. His coach realized that Moses had not eaten well the whole day and had drunk only a bottle of soda. He also noticed that Moses had difficulty seeing the ball at a distance and had complained of blurry vision during training.

TASK:

(a) Describe how the nervous system and muscles work together during movement.

(b) (i)Identify Moses's likely eye defect and explain how it can be corrected.

(ii) Suggest how Moses can improve his diet and vision to perform better as an athlete.

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ITEM 13

Grace, a P.6 pupil in Kabale, started struggling in class due to frequent urination, tiredness, and hunger even after meals. She also complained of back pain and sometimes missed school because of headaches and dizziness. Her parents took her for a check-up and found that her insulin levels were low. One day, during a noisy school debate, Grace covered her ears and fainted due to panic.

TASK:

(a)(i) Link the cause of the challenge to her health condition.

(ii) Describe the function of the brain in controlling emotions and how it responds to loud sounds.

(b) Suggest ways Grace's parents can support her in managing her condition and staying healthy in school.

ITEM 14

Allan, a 16-year-old student from Soroti, enjoys playing loud music through headphones every evening. Over time, he started experiencing ringing in his ears, loss of balance while walking, and slow reactions during class activities. One day, while crossing a busy road near his school, he failed to hear an oncoming boda-boda and was knocked down, injuring his leg. Doctors found that he had damaged his inner ear and fractured his tibia bone.

TASK:

(a) Explain how the reflex arc could have helped Allan avoid the accident.

(b) Suggest how Allan can prevent further ear damage and improve his body coordination.

ITEM 15

Kevin, a Senior Four student in Masaka, started using cocaine during the school holidays. After some months, his teachers noticed that he became aggressive, had difficulty concentrating, and often complained of tired legs and poor night vision. One evening, while rushing to catch a bus, he suddenly collapsed due to muscle cramps and blurred vision. Health workers confirmed that Kevin had a hormonal imbalance and vitamin A deficiency.

TASK:

(a)(i) Describe the effect of cocaine on Kevin's nervous system and behaviour.

(ii) Explain how muscles and nerves work together to bring about limb movement.

(b) Suggest how Kevin can recover from his addiction and manage his health conditions.

ITEM 16

At a school assembly in Fort Portal, Diana, a Senior Two student, fainted after hearing the sharp sound of a police siren outside the school gate. Her eyes widened, her heartbeat increased, and she began to sweat before collapsing. She had previously been diagnosed with osteoporosis and poor vision. After the incident, she was rushed to the hospital where they confirmed a fractured pelvic bone.

TASK:

(a)(i) Describe how Diana's body responded to the loud sound

(ii) Explain how the reflex arc works during a sudden threat.

(b) Suggest how Diana can manage both her weak bones and eye condition.

ITEM 17

In Mityana, 17-year-old Paul, a Senior 3 student and volleyball player, has been using a local stimulant herb, leading to restlessness and poor focus during games. During a match, a loud cheer from the crowd startled him, causing his heart to pound and his arms to cramp, making him miss a serve. He also struggles to see the ball clearly from a distance, affecting his performance, and his coach is concerned about his health.

Task:

(a) Explain how the following affected Paul's body:

(i) Stimulant herb use

(ii) loud cheer from the crowd

(b) Suggest ways Paul can manage his health to improve his volleyball performance.

ITEM 18

At a boda-boda stage in Mbale, Isaac, a young man, often drinks a lot of alcohol and sometimes

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smokes marijuana. One evening, while rushing home, he suddenly lost balance and stumbled (Lost balance) but did not fall. His friends noticed his speech was slurred, and he had difficulty hearing sounds clearly. Isaac often complains of headaches and blurred vision.

Task:

(a) (i)Explain how alcohol and marijuana affect Isaac's brain functions, hearing, and vision.

(ii). Describe how Isaac's body uses reflex actions to help him avoid falling when he stumbles.

(c) Suggest ways Isaac can improve his health and avoid problems caused by drug abuse.

ITEM 19

Amina, a P.5 pupil in Soroti, has difficulty seeing the chalkboard clearly from the front seats in class. Sometimes her eyes hurt after reading, and she squints to see distant objects. Her parents take her to a clinic where she is diagnosed with shortsightedness. Meanwhile, her friend Rashid complains of headaches and sudden muscle cramps in his legs after football practice.

Task:

(a) (i)Explain how the human eye works and what causes short-sightedness in Amina.

(ii)Describe the causes of muscle cramps in Rashid and how muscles work to produce movement.

(c) Suggest simple ways Amina and Rashid can manage their conditions to improve school performance and sports.

ITEM 20

In Gulu, Ronald, a 17-year-old student, was walking home when he suddenly touched a hot iron and quickly withdrew his hand. His heart rate increased, and he felt anxious. Ronald's doctor later explained to him how his body reacted quickly without thinking.

Task:

(a) (i) Describe the reflex action and reflex arc that occurred when Ronald touched the hot iron.

(ii) Explain the role of the brain and spinal cord in coordinating this reflex.

(c) Explain how the endocrine system might also respond during the sudden shock.

ITEM 21

At a primary school in Kampala, Sarah experiences severe headaches and poor concentration. The teacher noticed she often complains of joint pain and feels tired. A medical check-up showed Sarah has poor calcium levels affecting her bones. The doctor explained that her skeleton has two main parts: the axial and appendicular skeleton.

Task:

(a)(i) Describe the main parts of the human skeleton and their functions.

(ii) Explain how calcium deficiency affects Sarah's bones and joints.

(c) Suggest ways Sarah can improve her bone health through diet and lifestyle.

ITEM 22

During a football game in Fort Portal, Moses suddenly experienced muscle cramps in his legs. His vision also became blurry for a few minutes. His coach advised him to rest and drink plenty of fluids.

Task:

(a)(i) Explain the causes of muscle cramps and how muscles work to allow movement.

(ii)Describe the structure and functioning of the human eye, and why blurry vision might occur during intense exercise.

(c) Suggest ways Moses can prevent muscle cramps and maintain good vision as an athlete.

ITEM 23

In Masindi, Peter, a young man who works as a mechanic, has been using cocaine frequently. Lately, his friends noticed that Peter has poor muscle coordination and often complains of ringing in his ears and difficulty hearing conversations. One day, after a sudden loud noise in the workshop, Peter startled and quickly moved away from the source but felt dizzy and weak.

Task:

(a)(i) Explain how cocaine affects Peter's brain functions, muscles, and hearing ability.

(ii)Describe the reflex action that helped Peter move quickly away from danger.

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(c) Suggest ways Peter can recover from the effects of drug abuse and improve his health.

ITEM 24

In Mukono, Jane, a secondary school student, experiences difficulty seeing distant objects clearly, and sometimes her vision is blurry after reading. During sports, she often gets muscle cramps and complains of back pain. Her doctor explains that her spine is part of the axial skeleton, and her muscle cramps may be caused by dehydration.

Task:

(a) Explain the causes of Jane's blurry vision and muscle cramps, including how muscles work during movement.

(c) Suggest practical ways Jane can manage her vision problem and prevent muscle cramps.

ITEM 25

At a trading centre in Mbale, a group of young people were inhaling petrol fumes and drinking alcohol. Some started showing poor balance, blurred vision, and slow reflexes. One evening, one of them fell and injured his arm but did not feel the pain immediately because of slowed nerve responses.

Task:

(a) (i)Explain how inhaling petrol fumes and drinking alcohol affect the brain, vision, and reflex actions.

(ii)Describe the pathway of a reflex arc and how slowed nerve signals affect pain perception.

(c) Suggest how these young people can avoid health problems related to substance abuse.

ITEM 26

In Kampala, Rose, a P.6 pupil, struggles with short-sightedness and frequently experiences headaches after reading. During football practice, she also suffered muscle cramps in her calves. Her parents took her to a clinic where she was advised to rest, eat balanced meals, and get an eye test.

Task:

(a) (i)Explain how short-sightedness occurs.

(ii)Describe the causes of muscle cramps and how muscles contract and relax during movement.

(c) Suggest strategies Rose can make to improve her vision and prevent muscle cramps.

ITEM 27

Angela, a Senior Five student in Gulu, started feeling weak and tired after standing for a short time in class. She also noticed her bones paining and felt dizzy when she tried to walk faster. One morning during parade, she fainted. The school nurse reported that Angela had weak leg bones, muscle fatigue, and hormonal imbalance due to poor nutrition. Her reflexes were also slow, and she struggled to concentrate in class.

TASK

(a)(i) Explain how Angela's skeleton and muscles work together and why she got tired easily.

(ii) Describe the role of hormones and reflex action in daily body function and how poor nutrition may affect them.

(b) Suggest how Angela can improve her body function and manage her hormonal and bone health through proper diet and rest.

ITEM 28

Fred, a football captain in S.6 at a school in Lira, trained daily to improve his performance. One match day, as he was dribbling past opponents, he felt his leg muscles tighten and his vision became blurred due to sweat entering his eyes. He tried to continue but collapsed due to severe muscle cramps. The sports teacher explained that poor warm-up and dehydration were the main causes.

TASK

(a)(i). Describe how Fred's muscles and skeleton coordinate to allow movement while playing football.

(ii) Explain how the eye functions and why his vision was affected during the match.

(b) Suggest how Fred can prevent muscle cramps and maintain clear vision while playing sports.

ITEM 29

Peace, a mother of two living in Jinja, had been struggling with frequent mood swings, tiredness, and difficulty sleeping. She also started noticing that she had gained weight suddenly and her eyesight was worsening. After medical tests,

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doctors found that her body had a hormonal imbalance and she was developing short-sightedness.

TASK

(a) (i) Describe how hormones control body functions and how their imbalance could have affected Peace.

(ii) Explain the biological process of vision and how short-sightedness affects daily life.

(b) Suggest ways Peace can manage her hormone levels and correct her eye defect to live a healthy and productive life.

ITEM 30

In Jinja town, Musa, a 15-year-old student, started consuming cheap local potent spirits ("waragi") with friends after football matches. Recently, he has become forgetful, struggles to concentrate in class, and his hands often shake. One evening, walking home near the Nile, he stumbled on a rock. Although he saw it late, his body jerked violently to avoid a bad fall, scraping his arm instead.

Task:

(a) Explain:

(i) How Musa's consumption of waragi might be causing his forgetfulness, lack of concentration, and hand shaking.

(ii) How his body coordinated the jerking movement to avoid a worse fall after stumbling.

(b) Suggest solutions to help Musa overcome the challenges associated with his drinking habit.

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ELEMENT OF CONSTRUCT FIVE

Appreciates how characteristics are inherited in living organisms and passed to generations through Reproduction and manifested as the organism grows

GENETICS, REPRODUCTION, GROWTH AND DEVELOPMENT ITEMS

ITEM 1

In Gulu, farmer Okello and his wife, Rose, welcomed their first child, a boy who struggles to see colours, especially red and green, causing him to mix up objects at home. Colour is a sex-linked trait. Okello, who practices artificial selection to breed drought-resistant sorghum, also has HIV, which tires him out quickly while farming. The family faces gossip from neighbours who think the child's condition is a curse, adding to their stress.

Task:

(a) (i) Using genetic crossings, describe how colour blindness was transmitted to the boy.

(ii) describe how artificial selection leads to drought resist sorghum.

(b) Suggest ways Okello and Rose can manage their son's condition and Okello's health challenges.

ITEM 2

In Mityana, farmer John and his wife, Sarah, have a daughter who was born with sickle cell anemia, causing her frequent pain and weakness. John, who selects fast-growing chickens, struggles with erectile dysfunction, possibly due to stress, affecting their marriage. The community spreads rumors that the daughter's illness is linked to John's farming, causing social stigma.

Task:

(a) Explain how:

(i) Daughter inherited sickle cell anemia

(ii) erectile dysfunction can affect his reproductive potential.

(b) Suggest ways John and Sarah can manage their daughter's condition and their marital challenges.

ITEM 3

Lydia and Tom got married in Mbale. Their first son was born with signs of sickle cell anaemia. Later, Lydia was diagnosed with gonorrhoea, which she may have passed on unknowingly to the baby during childbirth. When she got pregnant again, doctors explained that there were risks related to both STDs and inheritance.

Tom was confused because he thought only women pass on such conditions.

TASK

(a) (i) Explain how their son inherited sickle cell anaemia.

(ii) Explain the effects of gonorrhoea on the baby and how it can be prevented in future pregnancies.

(c) What advice would you give to the couple about the role of both parents in inheritance and disease transmission?

ITEM 4

In Gulu, a teenage girl named Betty gave birth to a baby with white hair, pale skin, and red eyes. The child was diagnosed with albinism. Betty, still in school, faced rejection from her parents and mockery from fellow students. Some community members said she was cursed. The health worker explained it was a genetic condition and not her fault. Betty later showed signs of depression and dropped out of school.

TASK

(a) (i) Use genetic symbols to explain how the child inherited albinism.

(ii) Explain the role of mutation in such conditions.

(b)(i) Suggest how the family and community can support Betty and her baby.

(ii) Explain why adolescent girls face more risks during early pregnancy and how such situations can be prevented.

ITEM 5

Agnes and John, a couple living in Kampala, have been married for 6 years without having a child. Medical tests showed Agnes had hormonal imbalance while John had a low sperm count. They are both living with HIV and use birth control to avoid unplanned pregnancy. They have been told they can try assisted reproduction methods or adopt a child.

TASK

(a) (i) Describe how hormonal imbalance is related to infertility.

(ii) How does HIV affect reproduction and general health?

(b) Propose strategies to solve the above challenges.

ITEM 6

Joseph and Rose are farmers in Fort Portal. Their son, Paul, was born with colour blindness and often confuses red and green. His teachers thought he was lazy, but a test showed it was a genetic problem. Meanwhile, on their farm, Joseph breeds chickens with special colour patterns and good egg-laying abilities.

TASK

(a) (i) Explain how Paul inherited colour blindness.

(ii) Describe why sex-linked traits like colour blindness affect boys more than girls.

(b) Propose strategies to solve the above challenges.

ITEM 7

Anna and her husband David have a young son who bleeds for a long time even after a small injury. He was diagnosed with haemophilia. When Anna missed her periods for several months, she feared she was pregnant again. But tests showed she had a menstrual disorder caused by hormonal changes. The doctor explained about sex determination and the importance of proper family planning.

TASK

(a) (i) Use genetic symbols to show how their son inherited haemophilia.

(ii) Explain why haemophilia is more common in males.

(b) What advice would you give Anna to manage her menstrual irregularities and family planning?

ITEM 8

Shamim is a Senior Four student in Lira who got pregnant after her boyfriend convinced her not to use protection. At the hospital, she was found to be a sickle cell carrier and infected with candida and HIV. She was confused and scared about the pregnancy, and her family was disappointed.

TASK

(a) (i) Use genetic symbols to show how Shamim's baby could inherit sickle cell anaemia.

(ii) Explain how candida and HIV could affect the baby before or after birth.

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(b) Suggest ways schools and families can help reduce teenage pregnancies and STDs.

ITEM 9

Aisha and Mark were surprised when their third child was born with albinism, even though no one in their family looked like that. Their older daughter, aged 14, has started puberty but is worried because her menstrual periods are irregular. The mother thinks something is wrong with her.

TASK

(a) (i) Explain how their baby inherited albinism using genetic symbols.

(ii) Explain two normal changes that happen during puberty.

(c) Suggest possible causes of menstrual irregularities in teenage girls and how to manage them.

ITEM 10

Peter and Susan have three children two boys and a girl. One of the boys has haemophilia, while the other children are healthy. Susan was shocked because no one in her family had this condition. Their first-born daughter is now going through puberty and experiencing mood swings. The family also noticed that all three children are different in body size and behaviour.

TASK

(a) (i) Explain how haemophilia was inherited using genetic symbols.

(ii) Describe how sex is determined during reproduction.

(b) how can the family be helped?

ITEM 11

Doreen and Andrew live in Masaka. Their first child was diagnosed with sickle cell anaemia. When Doreen got pregnant again, the couple was worried the new baby might also have the same condition. A community health worker visited them and explained how such conditions are inherited and how to plan for healthy babies. The couple also learned about safe sex and how to protect themselves from sexually transmitted infections.

TASK

(a) (i) Use genetic symbols to show how their child inherited sickle cell anaemia.

(ii) Describe how sex is determined during fertilization.

(b) Suggest ways Doreen and Andrew can protect themselves from STDs.

ITEM 12

In Ntungamo, Grace gave birth to a baby with white skin and pink eyes. Her neighbours began to spread rumours, saying the baby was cursed. But the doctor explained that the baby had albinism, a genetic condition. Grace had also experienced a difficult birth, and the midwife taught her how to take care of the baby's skin and eyes.

TASK

(a) (i) Explain how the baby inherited albinism.

(ii) Describe how mutations can lead to such genetic conditions.

(b) (i)Suggest ways Grace can take care of her baby's health.

(ii) What can community members do to stop myths and support children with special conditions?

ITEM 13

In Kisumu village, Achieng and her husband Otieno were happy when they had their first child. However, the child was diagnosed with sickle cell disease after frequent hospital visits due to pain and fatigue. The couple later learned that both are carriers of the sickle cell gene but show no symptoms themselves. Their relatives advised them on the risks of having more children with the disease.

Task:

(a) (i)Explain how their child inherited sickle cell disease using Mendelian inheritance and genetic symbols.

(ii) Describe the importance of sex determination in humans and how sex-linked disorders differ from sickle cell disease.

(c) Suggest how Achieng and Otieno can manage the child's condition and plan for future children responsibly.

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ITEM 14

In Fort Portal, a young couple, Sarah and Michael, have been trying to have children for three years without success. Doctors diagnosed Sarah with hormonal imbalance affecting ovulation, and Michael was found to have erectile dysfunction. The couple also tested positive for Gonorrhoea, a sexually transmitted disease, complicating their fertility.

Task:

(a)(i) Describe how the conditions above causes of infertility in Sarah and Michael.

(ii)Explain the processes of fertilization and embryo development in humans.

(c) Suggest options that can help the couple improve their chances of conception.

ITEM 15

In Mukono, twins Peter and Paul were born to parents who both have normal vision. However, Paul was diagnosed with red-green colour blindness, while Peter has normal colour vision. Their parents want to understand how this happened and how it relates to sex linkage.

Task:

(a)(i)Explain the genetic basis of colour blindness and how it is inherited.

(ii) Describe the differences between mitosis and meiosis and their role in human reproduction and inheritance.

(c) Advise the parents on how they can support Paul's development despite his colour blindness.

ITEM 16

In Kampala, 16-year-old Lydia is experiencing irregular menstrual cycles and early signs of puberty. She recently learned about teenage pregnancy risks and wants to understand how to protect herself. Her school counselor also teaches about the importance of contraception and preventing STDs like HIV/AIDS.

Task:

(a) (i)Describe the biological changes during puberty and causes of menstrual irregularities.

(ii) Explain the methods of birth control available and their effects on the female reproductive system.

(c) Discuss the importance of preventing STDs, including HIV/AIDS, and ways Lydia can protect herself.

ITEM 17

In Lira, a farmer called Joseph uses artificial selection to breed cattle that produce more milk. However, some of his cattle developed mutations leading to health problems. Joseph wants to understand how mutations occur and how to avoid breeding unhealthy animals.

Task:

(a) (i)Explain the concepts of variation and artificial selection and how they apply to animal husbandry.

(ii)Describe mutations, including good, bad, and neutral types, and how they affect organisms.

(c) Suggest ways Joseph can manage his breeding program to avoid negative effects of mutations.

ITEM 18

In Kasese, a couple, Sarah and David, have a daughter with haemophilia. They want to understand how this disease is inherited and why only their daughter has it. Sarah is worried about the risks for future children. The family also wants to know how to take care of their daughter to avoid complications.

Task:

(a) Explain how haemophilia is inherited, focusing on sex linkage and the role of carriers.

(b) Suggest ways Sarah and David can manage their daughter's condition and prevent bleeding complications.

ITEM 19

In Kabale, twins Rose and Ruth were born. Rose has albinism, while Ruth has normal skin pigmentation. Their parents are confused about the condition and want to know how it occurred. They also want to learn about the care needed for Rose.

Task:

(a) Explain how albinism is inherited using Mendelian genetics and why only one twin has it.

(c) Suggest ways the family can protect Rose from skin damage and social stigma.

ITEM 20

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In Lira, a young couple tested positive for HIV. They have two healthy children but worry about the risk of transmitting the virus if they have more children. They want to know about reproduction, HIV transmission, and how to protect their family.

Task:

(a)(i) Explain how HIV affects the human body and its transmission during reproduction.

(ii)Describe the processes of fertilization, embryo development, and birth.

(b) Suggest measures the couple can take to prevent HIV transmission and have healthy children.

SECTION B

ELEMENT OF CONSTRUCT ONE

Appreciates diversity of living things and sustainability of natural resources.

ECOLOGY AND HUMAN ACTIVITIES ON THE ECOSYSTEM

ITEM 1

In Arua, farmer Akello cleared a wetland to grow rice, using pesticides to control insects and fertilizers to boost yields. She also removed all native grasses to expand her farm. After some time, she noticed fewer bees visiting her rice fields, reduced soil fertility, and frequent flooding during rains. The community complained that their water sources were drying up, blaming Akello's farming.

Task:

(a) Explain how the following affected the environment:

(i) Clearing the wetland

(ii) Using pesticides and fertilizers

(iii) Removing native grasses

(b) Suggest why Akello should conserve the wetland environment.

ITEM 2

In Mbale, a community on a forested hill began cutting trees for timber and grazing goats, which ate young plants. They also used fire to clear land for vegetable gardens. Over time, the area experienced soil erosion, fewer birds for pollination, and hotter temperatures. Villagers noticed reduced crop yields and blamed the hill's degradation, causing tension.

Task:

(a) Explain how the following caused environmental challenges:

(i) Tree cutting and goat grazing

(ii) Fire clearing

(iii) Reduced bird populations

(b) Suggest why the community should conserve the forested hill.

ITEM 3

In Gulu, farmer Okumu drained a swamp to plant beans, using chemicals to kill weeds and pests. He also introduced fast-growing bean varieties to increase profits. After some time, he observed fewer frogs and fish in nearby streams, poor bean growth due to hard soil, and water shortages in his village. Neighbors criticized his farming for harming their water supply.

Task:

(a) Explain how the following affected the environment:

(i) Swamp drainage

(ii) Chemical use

(iii) Fast-growing bean varieties

(b) Suggest why Okumu should conserve the swamp environment.

ITEM 4

In Kabale, a cooperative group cleared a grassland to grow potatoes, using tractors for ploughing and pesticides to control beetles. They also burned crop residues after harvest. Over time, they noticed fewer butterflies for pollination, degraded soil, and increased dust storms. The community worried about reduced harvests and health issues from dust, blaming the cooperative.

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Task:
(a) Explain how the following caused environmental challenges:
(i) Grassland clearing and tractor use
(ii) Pesticide application
(iii) Burning crop residues
(b) Suggest why the cooperative should conserve the grassland environment.

ITEM 5
In Jinja, farmer Auma removed a forest patch to expand her sorghum farm, using fertilizers to improve yields and fencing to keep out wild animals. She also planted a single sorghum variety for better sales. After some time, she noticed fewer birds and insects, poor soil quality, and hotter weather. Villagers complained about reduced water levels in nearby wells, causing disputes.
Task:
(a) Explain how the following affected the environment:
(i) Forest clearing and fencing
(ii) Fertilizer use
(iii) Single sorghum variety
(b) Suggest why Auma should conserve the forest environment.

ITEM 6
In Lira, farmer Auma started a large millet farm by clearing a savanna area, using herbicides to control weeds and planting a single fast-growing millet variety. She also diverted a small stream to irrigate her fields. After some time, she noticed fewer birds visiting her farm, hardened soil, and reduced water in nearby wells. Villagers blamed her for water shortages, causing community disputes.
Task:
(a) Explain how the following affected the environment:
(i) Savanna clearing and herbicide use
(ii) Single millet variety
(iii) Stream diversion
(b) Suggest why Auma should conserve the savanna environment.

ITEM 7
In Mityana, a community group cleared a woodland area to grow tomatoes, using chemical fertilizers and burning crop residues after harvest. They also introduced a new tomato variety for better yields. Over time, they observed fewer bees for pollination, poorer soil quality, and hotter temperatures in the area. Neighbors complained about reduced crop yields, blaming the group's practices.
Task:
(a) Explain how the following caused environmental challenges:
(i) Woodland clearing and burning residues
(ii) Chemical fertilizer use
(iii) New tomato variety
(b) Suggest why the community should conserve the woodland environment.

ITEM 8
In Kabarole, farmer Okello expanded his cassava farm by removing a grassy patch and using pesticides to control caterpillars. He also planted a single cassava variety to increase profits. After some time, he noticed fewer butterflies, compacted soil, and increased erosion during rains. The community worried about declining harvests and blamed Okello's farming for environmental damage.
Task:
(a) Explain how the following affected the environment:
(i) Grassy patch removal
(ii) Pesticide use
(iii) Single cassava variety
(b) Suggest why Okello should conserve the grassy environment.

ITEM 9
In Soroti, a cooperative began fish farming in a lake, using chemicals to control algae and overfishing to meet market demand. They also introduced a fast-growing fish species. After some time, they observed fewer water plants, declining fish populations, and polluted water affecting nearby farms. Villagers complained about reduced water quality, causing tension.

Hands-on-Biology

Task:
(a) Explain how the following caused environmental challenges:
(i) Chemical use for algae control
(ii) Overfishing
(iii) Fast-growing fish species
(b) Suggest why the cooperative should conserve the lake environment.

ITEM 10
In Masaka, farmer Nankya cleared a bushy area to plant groundnuts, using fertilizers to boost growth and fencing to keep out grazing animals. She also burned leftover plants after harvest. Over time, she noticed fewer insects for pollination, degraded soil, and hotter weather. The community blamed her for reduced water in streams, leading to disputes.
Task:
(a) Explain how the following affected the environment:
(i) Bush clearing and burning
(ii) Fertilizer use
(iii) Fencing to exclude animals
(b) Suggest why Nankya should conserve the bushy environment.

ITEM 11
In Jinja, a tourism company in a forest reserve introduced exotic bird species to attract visitors, used pesticides to control insects, and cleared undergrowth for trails. After some time, they observed fewer native birds, reduced tree growth, and soil erosion. Local farmers complained about lower crop pollination, blaming the company's actions.
Task:
(a) Explain how the following affected the environment:
(i) Exotic bird introduction
(ii) Pesticide use
(iii) Undergrowth clearing
(b) Suggest why the company should conserve the forest environment.

ITEM 12
In Masaka, Mrs. Namukasa planted beans on the same plot year after year without crop rotation. She used chemical pesticides to kill beetles but noticed the soil turned hard and dusty. Nearby, her fishpond developed green algae, and fish died suddenly during dry seasons.
Task:
(a) Explain how her farming practices caused:
(i) Soil exhaustion and algae growth.
(ii) Death of fish in the pond.
(b) Suggest two sustainable practices to restore soil fertility and pond health.

ITEM 13
A factory near Lake Victoria dumped untreated waste into a river. Fishermen noticed fewer Nile perch, and water hyacinth spread rapidly. Villagers using the river for bathing developed itchy rashes, while cows drinking the water produced less milk.
Task:
(a) Explain:
(i) How factory waste disrupted the aquatic food web.
(ii) Links between water pollution and health issues.
(b) Why conserving Lake Victoria is vital for communities.

ITEM 14
In Kasese, farmers cleared a forest to plant maize on a hillside. Heavy rains washed fertile soil into streams, clogging them with silt. Later, armyworms destroyed crops, and birds that once ate the worms disappeared.
Task:
(a) Relate:
(i) Deforestation to soil erosion and armyworm outbreaks.
(ii) Loss of birds to predator-prey imbalances.
(b) Suggest two ways to farm slopes sustainably.

ITEM 15
In Gulu, Mr. Okello burned grasslands yearly for fresh pasture. Ash made soil fertile briefly, but later, grasses grew poorly. Bees vanished, affecting mango trees' flowering. Winds blew loose soil onto roads, blocking drains.
Task:

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(a) Explain:
(i) Why burning caused short-term fertility but long-term damage.
(ii) How bee loss affected mango production.
(b) Propose a soil-conserving alternative to burning.

ITEM 16
In Hoima, a wetland was drained for rice farming. Mosquitoes multiplied, spreading malaria. Soil became acidic, killing earthworms. Herons that fed on wetland frogs starved, while floods worsened in nearby villages.
Task:
(a) Explain:
(i) How draining increased mosquitoes and reduced soil quality.
(ii) The heron-frog food chain disruption.
(b) Argue why wetlands should be conserved.

ITEM 17
In Lira, farmer Auma started a large millet farm by clearing a savanna area, using herbicides to control weeds and planting a single fast-growing millet variety. She also diverted a small stream to irrigate her fields. After some time, she noticed fewer birds visiting her farm, hardened soil, and reduced water in nearby wells. Villagers blamed her for water shortages, causing community disputes.
Task:
(a) Explain how the following affected the environment:
(i) Savanna clearing and herbicide use
(ii) Single millet variety
(iii) Stream diversion
(b) Suggest why Auma should conserve the savanna environment.

ITEM 18
In Mityana, a community group cleared a woodland area to grow tomatoes, using chemical fertilizers and burning crop residues after harvest. They also introduced a new tomato variety for better yields. Over time, they observed fewer bees for pollination, poorer soil quality, and hotter temperatures in the area. Neighbors complained about reduced crop yields, blaming the group's practices.
Task:
(a) Explain how the following caused environmental challenges:
(i) Woodland clearing and burning residues
(ii) Chemical fertilizer use
(iii) New tomato variety
(b) Suggest why the community should conserve the woodland environment.

ITEM 19
In Kabarole, farmer Okello expanded his cassava farm by removing a grassy patch and using pesticides to control caterpillars. He also planted a single cassava variety to increase profits. After some time, he noticed fewer butterflies, compacted soil, and increased erosion during rains. The community worried about declining harvests and blamed Okello's farming for environmental damage.
Task:
(a) Explain how the following affected the environment:
(i) Grassy patch removal
(ii) Pesticide use
(iii) Single cassava variety
(b) Suggest why Okello should conserve the grassy environment.

ITEM 20
In Soroti, a cooperative began fish farming in a lake, using chemicals to control algae and overfishing to meet market demand. They also introduced a fast-growing fish species. After some time, they observed fewer water plants, declining fish populations, and polluted water affecting nearby farms. Villagers complained about reduced water quality, causing tension.
Task:
(a) Explain how the following caused environmental challenges:
(i) Chemical use for algae control
(ii) Overfishing
(iii) Fast-growing fish species
(b) Suggest why the cooperative should conserve the lake environment.

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ITEM 21
In Masaka, farmer Nankya cleared a bushy area to plant groundnuts, using fertilizers to boost growth and fencing to keep out grazing animals. She also burned leftover plants after harvest. Over time, she noticed fewer insects for pollination, degraded soil, and hotter weather. The community blamed her for reduced water in streams, leading to disputes.
Task:
(a) Explain how the following affected the environment:
(i) Bush clearing and burning
(ii) Fertilizer use
(iii) Fencing to exclude animals
(b) Suggest why Nankya should conserve the bushy environment.

ITEM 22
In Jinja, a tourism company in a forest reserve introduced exotic bird species to attract visitors, used pesticides to control insects, and cleared undergrowth for trails. After some time, they observed fewer native birds, reduced tree growth, and soil erosion. Local farmers complained about lower crop pollination, blaming the company's actions.
Task:
(a) Explain how the following affected the environment:
(i) Exotic bird introduction
(ii) Pesticide use
(iii) Undergrowth clearing
(b) Suggest why the company should conserve the forest environment.

ITEM 23
In Arua, farmer Rose started a large sorghum farm by clearing a thicket and using pesticides to control locusts. She also plowed deeply with a tractor to prepare the land. After some time, she noticed fewer birds visiting her sorghum flowers, eroded soil during rains, and smoky air from nearby farmers' burning. The community complained about poor water quality in local streams, blaming Rose's farming practices.
Task:
(a) Explain how the following caused environmental challenges:
(i) Thicket clearing and pesticide use
(ii) Deep plowing with a tractor
(b) Suggest why Rose should conserve the thicket environment.

ITEM 24
In Kabale, a village cooperative began growing cabbages on a hillside, removing native shrubs and using chemical fertilizers to increase yields. They also drove away small mammals to protect their crops. Over time, they observed fewer bees pollinating their cabbages, soil washing away during rains, and hotter weather. Villagers worried about declining harvests and blamed the cooperative, causing tension.
Task:
(a) Explain how the following caused environmental challenges:
(i) Shrub removal and fertilizer use
(ii) Driving away small mammals
(b) Suggest why the cooperative should conserve the hillside environment.

ITEM 25
In Mityana, farmer Okumu started a poultry farm near a small forest, using antibiotics to prevent chicken diseases and clearing trees to build more coops. He also dumped chicken waste into a nearby stream. After some time, he noticed fewer frogs in the stream, polluted water affecting nearby gardens, and reduced wild animal sightings. The community complained about health issues, blaming Okumu's farm.
Task:
(a) Explain how the following caused environmental challenges:
(i) Antibiotic use and tree clearing
(ii) Dumping chicken waste
(b) Suggest why Okumu should conserve the forest and stream environment.

ITEM 26
In Soroti, a community group began growing sunflowers on a plain, using herbicides to control weeds and burning leftover stalks after harvest. They also introduced a single sunflower variety for better sales. Over time, they noticed fewer butterflies visiting their flowers, degraded soil,

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and dustier air. Neighbors complained about lower crop yields, blaming the group's practices.

Task:

(a) Explain how the following caused environmental challenges:

(i) Herbicide use and burning stalks

(ii) Single sunflower variety

(b) Suggest why the community should conserve the plain environment.

ELEMENT OF CONSTRUCT THREE

Understands how mammals obtain and use nutrients to meet their energy requirements during which raw Materials and products are carried to and from various organs.

HUMAN BIOLOGY ITEMS

ITEM 1

In Arua, 45-year-old farmer Okot suffers from nutrient deficiency, chronic bronchitis, and early kidney failure, causing him to feel weak, cough frequently, and pass cloudy urine. His nutrient deficiency leads to tiredness, pale skin, and dizziness. His bronchitis causes persistent coughs, shortness of breath, and chest pains. His kidney failure results in cloudy urine, swollen legs, and fatigue. His family worries about his declining farm work, and neighbors think his health issues are due to overwork, causing Okot stress.

Task:

(a) Explain how the following health challenges caused Okot's health conditions:

(i) Nutrient deficiency

(ii) Chronic bronchitis

(iii) Early kidney failure

(b) Suggest ways Okot can manage his health challenges to continue farming.

ITEM 2

In Mbale, 17-year-old student Sarah suffers from anemia, obesity, and a respiratory infection, leading to weakness, weight gain, and breathing difficulties. Her anemia causes pale skin, tiredness, and dizziness. Her obesity results in joint pains, excessive sweating, and slow movements. Her respiratory infection leads to chronic coughs, shortness of breath, and chest tightness. Her teachers notice her poor school performance, and her parents worry she might fail, causing Sarah to feel isolated.

Task:

(a) Explain how the following health challenges caused Sarah's symptoms:

(i) Anaemia

(ii) Obesity

(iii) Respiratory infection

(b) Suggest ways Sarah's parents can help her manage her health to improve her school performance.

ITEM 3

Mrs. Nansubuga, a 45-year-old trader in Kampala, eats fast foods daily such as chips, fried chicken, and soda. She rarely exercises. Over time, she gained a lot of weight, developed chest pain, and often feels tired even after small movements. Doctors found that she was obese, had high blood pressure, and her blood vessels were narrowing. Her blood tests showed high cholesterol levels.

Task

(a) (i) Explain how Mrs. Nansubuga's diet and lifestyle caused her health problems.

(ii) Describe the process of food digestion and how excess lipids affect the body.

(b) Suggest lifestyle changes she can make to improve her health.

ITEM 4

Ali is a 9-year-old boy living in a rural village in Kiboga. He eats mainly cassava and porridge every day. He is often weak, falls sick frequently, and has delayed growth compared to his age mates. At the health centre, he was found to be underweight, had low immunity, and lacked red blood cells.

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Task
(a) Explain how lifestyle is contributes to his health condition.
(c) Suggest a balanced diet that Ali's caregivers can provide using locally available foods.

ITEM 5
Mr. Owino, a retired head teacher in Tororo, began experiencing body swelling, back pain, and difficulty urinating. He also complained of fatigue and loss of appetite. At the hospital, doctors found that his kidneys were failing, and his urine contained proteins. He was advised to reduce salt intake and drink more water.
Task
(a) (i) Describe the structure of the kidney and how urine is formed.
(ii) Explain how proteinuria shows kidney failure.
(b) Suggest ways Mr. Owino can manage his condition to reduce further damage.

ITEM 6
In Jinja, 50-year-old market trader Paul has diabetes, a chronic cough, and lymph fluid buildup, causing high blood sugar, coughing spells, and swollen limbs. His diabetes leads to frequent thirst, weight loss, and blurred vision. His chronic cough causes chest pains, hoarse voice, and shortness of breath. His lymph fluid buildup results in swollen legs, heavy limbs, and difficulty walking. His customers avoid his stall due to his frequent illnesses, and his family worries about his business, causing Paul stress.
Task:
(a) Explain how the following health challenges caused Paul's symptoms:
(i) Diabetes
(ii) Chronic cough
(iii) Lymph fluid buildup
(b) Suggest ways Paul can manage his health to maintain his business.

ITEM 7
In Mityana, 30-year-old teacher Grace suffers from protein deficiency, bronchitis, and early elephantiasis, leading to weakness, coughing, and swollen ankles. Her protein deficiency causes muscle wasting, tiredness, and slow healing of wounds. Her bronchitis results in persistent coughs, shortness of breath, and chest pains. Her early elephantiasis leads to swollen ankles, leg heaviness, and skin thickening. Her students notice her frequent absences, and her colleagues worry she might lose her job, causing Grace to feel anxious.
Task:
(a) Explain how the following health challenges caused Grace's symptoms:
(i) Protein deficiency
(ii) Bronchitis
(iii) Early elephantiasis
(b) Suggest ways Grace can manage her health to continue teaching.

ITEM 8
Kevin, a 12-year-old boy from Karamoja, has been eating mainly millet porridge with no vegetables or fruits. Over time, he developed swollen gums, poor wound healing, and weak bones. He also falls sick frequently. His teacher noticed he is shorter than most of his age mates.
Task
(a)(i) Explain how poor digestion and absorption can worsen his condition.
(ii) How does a strong immune system help protect Kevin from frequent illness?
(b) Suggest a diet plan using local foods to help Kevin recover and grow well.

ITEM 9
Madam Harriet, a headmistress in Masindi, drives to work daily, spends long hours at her desk, and eats a lot of fried foods and sugary drinks. She recently started feeling breathless after short walks and has swollen ankles. Doctors told her she is obese and has high blood pressure.
Task
(a) (i) Explain how Madam Harriet's lifestyle led to obesity and poor circulation.
(ii) Describe how oxygen and food are transported through blood.
(b) Suggest lifestyle changes Madam Harriet can make to regain good health.

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ITEM 10

James, a cattle keeper from Rakai, developed constant fatigue, dry mouth, and dizziness. He drinks very little water, eats mostly meat with no vegetables, and avoids fruits. At the health centre, doctors said his blood pressure was low, and his body was dehydrated.

Task

(a) (i) Explain how lack of water affects blood composition and transport.

(ii) Describe how proper hydration and diet support immunity.

(b) Suggest practical ways James can improve his diet and hydration using available resources.

ITEM 11

In Kabale, 35-year-old farmer Rose suffers from vitamin deficiency, kidney dysfunction, and a respiratory infection, causing tiredness, urinary issues, and breathing problems. Her vitamin deficiency leads to weak bones, fatigue, and poor vision. Her kidney dysfunction causes dark urine, swollen feet, and back pain. Her respiratory infection results in chronic coughs, shortness of breath, and chest tightness. Her family worries about her reduced farm work, and neighbors think her illness is due to poor diet, causing Rose embarrassment.

Task:

(a) Explain how the following health challenges caused Rose's symptoms:

(i) Vitamin deficiency

(ii) Kidney dysfunction

(iii) Respiratory infection

(b) Suggest ways Rose can manage her health to continue farming.

ITEM 12

In Lira, 38-year-old farmer Akello suffers from iron deficiency, emphysema, and early kidney dysfunction, leading to weakness, breathing issues, and urinary problems. His iron deficiency causes pale skin, fatigue, and dizziness. His emphysema results in persistent coughs, shortness of breath, and chest pain. His kidney dysfunction leads to frequent urination, swollen hands, and lower back pain. His family worries about his reduced farm work, and neighbours think his illness is due to poor diet, causing Akello embarrassment.

Task:

(a) Explain how the following health challenges caused Akello's symptoms:

(i) Iron deficiency

(ii) Emphysema

(iii) Early kidney dysfunction

(b) Suggest ways Akello can manage his health challenges to continue farming.

ITEM 13

In Soroti, 20-year-old student Mary suffers from vitamin A deficiency, chronic throat infection, and obesity, leading to vision problems, throat issues, and mobility challenges. Her vitamin A deficiency causes night blindness, dry eyes, and frequent infections. Her throat infection results in sore throat, difficulty swallowing, and hoarse voice. Her obesity leads to knee pain, excessive sweating, and tiredness. Her teachers notice her poor class participation, and her parents worry about her health, causing Mary stress.

Task:

(a) Explain how the following health challenges caused Mary's symptoms:

(i) Vitamin A deficiency

(ii) Chronic throat infection

(iii) Obesity

(b) Suggest ways Mary's parents can help her manage her health to improve her school performance.

ITEM 14

In Kabale, 42-year-old trader John suffers from protein deficiency, lung infection, and lymph fluid retention, leading to muscle weakness, breathing issues, and swelling. His protein deficiency causes muscle cramps, slow wound healing, and fatigue. His lung infection results in chronic coughs, shortness of breath, and fever. His lymph fluid retention leads to swollen feet, heavy legs, and skin tightness. His customers notice his reduced energy, and his family fears he might lose his business, causing John anxiety.

Task:

(a) Explain how the following health challenges caused John's symptoms:

(i) Protein deficiency

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(ii) Lung infection
(iii) Lymph fluid retention
(b) Suggest ways John can manage his health to maintain his business.

ITEM 15
In Mbarara, 28-year-old teacher Rose suffers from vitamin D deficiency, chronic bronchitis, and early kidney issues, leading to bone pain, breathing difficulties, and urinary problems. Her vitamin D deficiency causes weak bones, joint stiffness, and tiredness. Her bronchitis results in persistent coughs, chest tightness, and shortness of breath. Her kidney issues lead to dark urine, swollen ankles, and back pain. Her students notice her frequent absences, and her colleagues worry she might lose her job, causing Rose distress.
Task:
(a) Explain how the following health challenges caused Rose's symptoms:
(i) Vitamin D deficiency
(ii) Chronic bronchitis
(iii) Early kidney issues
(b) Suggest ways Rose can manage her health to continue teaching.

ITEM 16
In Jinja, 35-year-old fisherman Peter suffers from carbohydrate deficiency, throat cancer, and lymph fluid buildup, leading to weakness, throat problems, and swelling. His carbohydrate deficiency causes low energy, dizziness, and weight loss. His throat cancer results in sore throat, difficulty swallowing, and hoarse voice. His lymph fluid buildup leads to swollen legs, heavy limbs, and skin thickening. His family worries about his reduced fishing, and neighbors think his illness is due to lake water, causing Peter shame.
Task:
(a) Explain how the following health challenges caused Peter's symptoms:
(i) Carbohydrate deficiency
(ii) Throat cancer
(iii) Lymph fluid buildup
(b) Suggest ways Peter can manage his health to continue fishing.

ITEM 17
In Gulu, 50-year-old shopkeeper Anna suffers from vitamin C deficiency, lung infection, and obesity, leading to skin issues, breathing problems, and mobility challenges. Her vitamin C deficiency causes bleeding gums, slow wound healing, and frequent infections. Her lung infection results in chronic coughs, shortness of breath, and chest pain. Her obesity leads to joint pain, excessive sweating, and fatigue. Her customers notice her frequent breaks, and her family fears she might close her shop, causing Anna worry.
Task:
(a) Explain how the following health challenges caused Anna's symptoms:
(i) Vitamin C deficiency
(ii) Lung infection
(iii) Obesity
(b) Suggest ways Anna can manage her health to maintain her shop.

ITEM 18
In Fort Portal, 42-year-old farmer David suffers from calcium deficiency, chronic lung infection, and weakened immunity, leading to bone issues, breathing problems, and frequent illnesses. His calcium deficiency causes brittle nails, weak bones, and muscle cramps. His lung infection results in persistent coughs, shortness of breath, and chest tightness. His weakened immunity leads to frequent fevers, skin rashes, and slow healing of wounds. His family worries about his reduced farm work, and neighbors think his illness is due to poor farming, causing David stress.
Task:
(a) Explain how the following health challenges caused David's symptoms:
(i) Calcium deficiency
(ii) Chronic lung infection
(iii) Weakened immunity
(b) Suggest ways David can manage his health challenges to continue farming.

ITEM 19
In Masindi, 19-year-old student Jane suffers from vitamin B deficiency, early kidney impairment, and obesity, leading to nerve issues, urinary

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problems, and mobility challenges. Her vitamin B deficiency causes tingling hands, fatigue, and mood swings. Her kidney impairment results in painful urination, swollen feet, and lower back pain. Her obesity leads to knee pain, excessive sweating, and tiredness. Her teachers notice her poor concentration, and her parents worry she might fail exams, causing Jane anxiety.

Task:

(a) Explain how the following health challenges caused Jane's symptoms:

(i) Vitamin B deficiency

(ii) Early kidney impairment

(iii) Obesity

(b) Suggest ways Jane's parents can help her manage her health to improve her school performance.

ITEM 20

In Mbarara, 48-year-old shopkeeper Paul suffers from folate deficiency, chronic respiratory infection, and lymph fluid retention, leading to weakness, breathing issues, and swelling. His folate deficiency causes pale skin, tiredness, and mouth sores. His respiratory infection results in chronic coughs, shortness of breath, and chest pain. His lymph fluid retention leads to swollen legs, heavy limbs, and skin tightness. His customers notice his frequent breaks, and his family fears he might close his shop, causing Paul worry.

Task:

(a) Explain how the following health challenges caused Paul's symptoms:

(i) Folate deficiency

(ii) Chronic respiratory infection

(iii) Lymph fluid retention

(b) Suggest ways Paul can manage his health to maintain his shop.

ITEM 21

In Soroti, 30-year-old nurse Grace suffers from protein-energy malnutrition, lung infection, and early kidney dysfunction, leading to weakness, breathing difficulties, and urinary issues. Her protein-energy malnutrition causes muscle wasting, fatigue, and slow wound healing. Her lung infection results in persistent coughs, chest tightness, and fever. Her kidney dysfunction leads to dark urine, swollen ankles, and back pain. Her colleagues notice her frequent absences, and her family worries about her job, causing Grace distress.

Task:

(a) Explain how the following health challenges caused Grace's symptoms:

(i) Protein-energy malnutrition

(ii) Lung infection

(iii) Early kidney dysfunction

(b) Suggest ways Grace can manage her health to continue nursing.

ITEM 22

In Jinja, 35-year-old fisherman Okumu suffers from vitamin C deficiency, chronic bronchitis, and obesity, leading to skin issues, breathing problems, and mobility challenges. His vitamin C deficiency causes bleeding gums, slow healing of cuts, and frequent infections. His chronic bronchitis results in persistent coughs, shortness of breath, and chest pain. His obesity leads to joint pain, excessive sweating, and tiredness. His family worries about his reduced fishing, and neighbors think his illness is due to lake work, causing Okumu embarrassment.

Task:

(a) Explain how the following health challenges caused Okumu's symptoms:

(i) Vitamin C deficiency

(ii) Chronic bronchitis

(iii) Obesity

(b) Suggest ways Okumu can manage his health to continue fishing.

ITEM 23

Nakato, a secondary school student in Kampala, has been experiencing stunted growth, persistent fatigue, and frequent nosebleeds. Her diet consists mainly of cassava and posho (maize flour) with little variety. She lives in a water-scarce area where clean drinking water is limited, and her family cannot afford mosquito nets despite high malaria risk.

Task:

(a) Explain how her lifestyle causes Nakato's health challenges:

(b) Suggest practical solutions to address her health challenges

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ITEM 24

Mr. Otieno, a bus driver on the Kampala-Mbarara route, has developed swollen legs, chronic cough, and blurred vision. He smokes 10 cigarettes daily, eats deep-fried street food (like rolex and samosas), and sits for 12 hours without stretching. His medical checkup revealed hypertension and breathing difficulties.

Task:

(a) Link his lifestyle to the his health condition.
(b) Advise Mr. Otieno on changes to manage these conditions.

ITEM 25

Baby Kato, aged 2 in Jinja, suffers from diarrhoea, swollen belly, and pale skin. He drinks untreated water from Lake Victoria, eats only maize porridge, and lives in a damp, mosquito-infested house. The clinic diagnosed severe anaemia and intestinal worms.

Task:

(a) Analyse causes of his symptoms:
(b) Propose a recovery diet using affordable local foods.

ITEM 26

Ms. Adongo, a fishmonger at Kasenyi Landing Site, experiences joint pain, frothy urine, and breathlessness. She works in polluted swampy areas, consumes alcohol daily, and eats mostly salted fish. Medical tests show kidney damage and respiratory issues.

Task:

(a) Relate the causes to her health problems
(b) Recommend lifestyle adjustments to improve her health.

ITEM 27

Juma, a 16-year-old in Gulu, has persistent acne, bone pain, and dizziness. He skips meals for chips and soda, avoids sunlight due to cultural practices, and shares crowded quarters with tuberculosis patients. Blood tests show low vitamin D and calcium.

Task:

(a) Connect the causes to his symptoms:
(b) Outline a management plan combining diet, environment, and hygiene.

ITEM 28

Namagembe, a 30-year-old woman from Iganga, was pregnant with her second child. During her third trimester, she suffered from swollen legs, high blood pressure, and reduced urine output. Her midwife suspected **kidney strain** and low protein in her urine. She was admitted for close monitoring and advised to drink more water and improve her diet. After delivery, she was placed on treatment to restore proper kidney function.

Task

(a) Describe how poor kidney function affected Namagembe's health during pregnancy.
(b) Suggest how Namagembe can manage and protect her kidneys after delivery.

ITEM 29

Paul, a 28-year-old teacher from Fort Portal, fell sick after returning from a holiday trip. He had a high fever, sore throat, painful joints, and later developed a rash. He was treated at the hospital and told that his immune system had been weakened due to stress and poor feeding. The doctor emphasized the need to improve immunity through diet, rest, and hygiene.

Task

(a) Explain how Paul's lifestyle and condition affected the functioning of his immune system.
(b) Suggest ways in which Paul can strengthen his immunity and avoid frequent infections.

ITEM 30

Mrs. Namusoke, a 45-year-old teacher in Mbale, had been experiencing frequent tiredness, swollen legs, and shortness of breath. She often skipped meals due to her busy schedule and mostly ate fried snacks and soda. One day, she collapsed while walking to school and was rushed to the hospital. The doctors diagnosed her with obesity, early-stage kidney failure, and low immunity. They also found that her blood had low oxygen levels and she had protein in her urine.

Task:

(a) Explain how Mrs. Namusoke's lifestyle led to the health problems she experienced.
(b) Suggest how she can manage her health conditions and improve her body functioning.

Hands-on-Biology

BUDDO SECONDARY SCHOOL
Lower Secondary
BIOLOGY SEMINAR 2026

553/1 BIOLOGY PAPER 1 (THEORY) – SAMPLE ITEMS

SECTION A

1. PLANT BIOLOGY

Item 1

Mr. Buyinza planted maize in the previous season. However, at the flowering stage, there was no rainfall for three weeks. The soil hardened, and when he uprooted one plant, it had few short roots. The leaves drooped and turned pale yellow, stems became weak, and silk and tassels failed to form. The plants showed stunted growth and Mr. Buyinza lost hope of any harvest.

When the rains returned, the maize plants developed many long roots. The stems became thick and firm, new green leaves formed, and silk and tassels appeared. Some cobs developed, enabling partial recovery and a low harvest.

Task

(a) Explain the effects of the condition at flowering stage that led to no hope of any harvest from the garden.
(b) Account for the recovery changes observed in maize plants after the rains returned that led to some harvest.

Item 2

In Lacor village, Sarah's cassava plants were repeatedly eaten by goats belonging to her neighbour Grace. The goats fed on leaves, apical buds, stem surfaces, and floral buds. As a result, the plants became stunted and there was little hope of forming tubers.
After the Chairman L.C.1 intervened, Grace restrained her goats. The cassava plants then developed many axillary buds and green leaves. Their stems thickened with protective layers and the tubers formed, though they were few and small.

Task

(a) Explain the effects of the goats' action on plant processes that resulted in stunted growth and loss of hope for tuber formation.
(b) Explain how the observed changes after restraining the goats enabled the cassava plants to form some tubers.

Item 3

In Busia District, neighbours Dong and Okello decided to grow tomatoes in the previous season after learning that tomato farming was more profitable than cassava. Odong used to spray pesticides on his tomato plants early in the morning, the same time bees usually visited the flowers. He also applied fertilizer in amounts higher than recommended, believing it would boost yield. Instead, the excess fertilizer damaged the plants, causing leaves to dry, stems to become thin and weak, and many flowers to drop off and only a few small fruits developed, resulting in a poor harvest.

Meanwhile, his neighbour Mr. Okello applied the recommended amount of fertilizer and used to spray pesticides in the afternoon, after bees had finished visiting the flowers. His tomato plants grew larger green leaves, developed thick strong stems, produced many flowers, and formed numerous large fruits. As a result, he obtained a much higher yield.

Task

(a) Explain how Odong's actions affected plant processes leading to poor harvest.
(b) Explain how Okello's actions enabled his tomato plants to give a higher yield.

Item 4

At Buddo Secondary School, Senior Three students planted bean seeds in two plots, **A** and **B**, as part of their continuous assessment.

- Plot **A** had dry, compacted soil with little water. In this plot, most seeds failed to germinate. The few that germinated were stunted, with short roots and small yellow leaves. Eventually, the plants dried up without forming pods, and there was no harvest.

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- Plot **B** had moist, loose soil rich in minerals. In this plot, all the bean seeds germinated successfully. The plants developed many long roots, large green leaves, and elongated stems. They flowered, produced numerous pods, and gave a high yield.

Task

(a) Explain how the conditions in Plot **A** affected the bean seeds and plants, leading to no harvest.
(b) Explain how the conditions in Plot **B** affected the bean seeds and plants, leading to a high yield.

Item 5

Kiiza, a renowned Irish potato farmer in Kasese, experienced a severe hailstorm that struck her garden and caused heavy damage. The leaves were torn, stems were broken, and flowers were knocked off. She feared that this destruction would affect the development of her potato tubers.

After some time, when she had almost lost hope, she noticed new shoots emerging from the soil. These shoots grew from the tubers that had remained underground. They produced fresh buds, numerous nodes, elongated internodes, and an extensive shoot system. Gradually, the Irish potato garden revived.

Task

(a) Explain to Kyomugisha how the processes in her plants were affected by the hailstorm.
(b) Explain how the Irish potatoes managed to revive after some time.

Item 6

In Namwiwa, a farmer named Okiror planted sorghum in a swampy area during the previous growing season. At the flowering stage, heavy rains caused flooding in his garden. The roots began to decay due to waterlogging, the leaves turned yellow, and most stems became weak and started to collapse. Okiror lost hope of any harvest.

After two weeks, the heavy rains stopped, the garden drained, and the flooding ended. The sorghum plants gradually revived: the leaves became dark green, stems grew firm, new flowers appeared, and grains were formed, though fewer than expected.

Task

(a) Explain how flooding affected sorghum processes, leading to poor growth and no harvest.
(b) Explain how recovery after flooding enabled sorghum to form some grains.

2. COORDINATION AND LOCOMOTION IN HUMANS

Item 7

Kalema, a Senior Three-day scholar at Lubiri S.S., was walking home when a speeding car from behind suddenly honked loudly near him. Startled by the sound, he felt his heart pounding, his breathing quickened, and his pupils widen. In panic, he jumped into a roadside trench to escape danger. Unfortunately, he sustained injuries and fractured one leg instantly. Pedestrians rushed to help him and took him to Lubaga Hospital, where he received treatment.

While in hospital, medical examination revealed that Kalema was suffering from osteoporosis, a condition that had weakened his bones and contributed to the severity of the fracture.

Task

(a) Explain the sequence of events in Kalema's body that enable him to respond to the car horn until he fell into the trench.
(b) Suggest strategies Kalema can use to manage the disease he was diagnosed with in the hospital.

Item 8

Namusoke, a 38-year-old shop attendant, had recently begun experiencing health problems that interfered with her work. These included feeling very thirsty, passing urine frequently, and difficulty in seeing far objects clearly. One afternoon, while serving customers, she accidentally touched a naked live electric wire. Instantly, she pulled her hand away, but moments later she staggered, hit her head, and lost consciousness. She was rushed to hospital, where doctors carried out several medical tests.

The medical report revealed that Namusoke's blood glucose levels were far above normal, which made her weak and unable to balance after the electric shock. She was also diagnosed with myopia and was given glasses with special lenses to enable her to see clearly.

Task

(a) Explain how Namusoke's body responded after touching the live wire until her hand was withdrawn.
(b) (i) Explain how the glasses given to Namusoke enabled her to see clearly.

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(ii) Without going to the hospital, suggest ways Namusoke can use to manage her health condition which makes her very thirsty and urinate frequently.

Item 9

During last term holiday, Opio, a Senior Four student in Kumi, noticed worrying signs among his relatives. His elder brother was constantly thirsty, hungry, and passing urine frequently. Their grandmother had a swelling on her neck. Their father struggled to see nearby objects clearly. Concerned, Opio encouraged his family to seek medical attention.

Upon medical examination, the elder brother was diagnosed with high glucose levels above normal. The grandmother's neck swelling was linked to a hormonal disorder. The father was diagnosed with hypermetropia. The elder brother and grandmother started on prescribed medication, while the father was given reading glasses.

Task

(a) Explain the possible causes of the health conditions affecting Opio's relatives.
(b) (i) Suggest ways to manage the health conditions affecting Opio's grandmother.
(ii) Explain how the reading glasses given to the father enabled him to see clearly.

Item 10

Ssemanda, a youth in Kireka, often spent time with peers drinking alcohol and sniffing glue. His group was also known for supplying these substances to students from nearby schools. To curb drug misuse, police began targeting such groups. One day, officers arrived at their spot and fired bullets into the air, causing panic. Ssemanda felt his heart pounding and breathing quicken as he fled with the others.

After sprinting about 100 metres, Ssemanda experienced severe muscle pain and tightening, forcing him to stop. Exhausted, he was quickly captured by a police officer while still in pain.

Task

(a) Explain the sequence of events in Ssemanda's body from the moment the police fired bullets until he felt pain in his leg muscles.
(b) Suggest what Police and the Kireka community should do to stop the habit practiced by Ssemanda's group and others.

3. REPRODUCTION IN HUMANS, GROWTH AND DEVELOPMENT IN ANIMALS, AND GENETICS

Item 11

At one of the girls' boarding school in Wakiso, the nurses have received several complaints from girls about menstrual cycle abnormalities, including irregular periods and painful cramps. The school clinic has also recorded multiple cases of candida infections among students.

At the same time, the matron reported a heavy cockroach infestation in dormitories and toilets. Despite periodic spraying with insecticides that killed a large number of both winged and wingless cockroaches, their population has remained high and alarming.

Task

(a) (i) Explain the causes of the challenges amongst most students.
(ii) Describe how the different stages of the pests in the scenario were formed.
(b) Suggest measures the school administration can implement to address the reproductive health challenges among students.

Item 12

Mary, a 15-year-old Primary Seven pupil, became pregnant and was expelled from school. Her parents forced her to live with Joel, her boyfriend, in a nearby village. During her pregnancy, Mary faced many challenges and did not receive antenatal care. She eventually gave birth to an underweight child who had albinism. Joel denied responsibility, claiming he could not father an albino child since he was dark-skinned.

To resolve the dispute, a DNA test was conducted, which confirmed Joel was indeed the father of the child. Further medical tests revealed that both Joel and Mary were carriers of the albinism gene and were also diagnosed with syphilis.

Task

(a) Explain how Mary's action negatively affected her life.
(b) Using a genetic diagram, convince Joel and Mary that they are both responsible for the genetic disorder in their child.
(c) What advice would you give Mary and other teenagers to avoid facing similar consequences?

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Item 13

Mr. and Mrs. Okello have two children, Joan and Joseph. Joan, the elder daughter, has just entered puberty and is struggling with changes such as breast enlargement, monthly menstrual cycles, mood swings, and curiosity about relationships. She is often disturbed by boys who ask her for love. When she shared her challenges with her mother, she was advised to accept one who could support her with school fees, since the family is financially strained.

Joseph, her younger brother, is playful. Last month he sustained a deep cut on his leg, and the bleeding did not stop until he was rushed to hospital, where the doctor administered clotting factors.' The doctor explained that Joseph suffers from haemophilia, a recessive genetic condition inherited from both parents. The parents doubted this because they themselves clot blood quickly whenever they get wounds.

Task

(a) (i) Explain to Joan how she can cope with the body changes she is going through.
(ii) Explain to Joan why she should not take her mother's advice.
(b) Using a genetic diagram, show the parents of Joseph how they are both responsible for the genetic condition he is suffering from.

Item 14

Adong, a farmer in Lacor village, Gulu, planted two varieties of beans in the same garden—one with yellow seeds and the other with green seeds. When she harvested, she was surprised to find that all the seeds were yellow, with none of the green variety appearing. This puzzled her, as she had expected both colours to be present in the harvest.

In the following season, Adong replanted the yellow seeds from her first harvest. This time, the crop produced a mixture of yellow and green seeds. When she took the mixed seeds to the market, customers preferred buying single-coloured beans, forcing her to sell at a lower price. Concerned about her earnings, Adong began to wonder how she could manage her crop better to produce uniform seed colour and increase her profits in future harvests.

Task

(a) (i) What factors contributed to the differences in seed colour in Adong's bean harvest?
(ii) Using genetic crosses, explain to Adong how differences in the bean harvest came about.
(b) Suggest best practices for Adong in order to produce preferred uniform seed colour.

Item 15

Peter and Mariam had a happy marriage with three healthy boys. When Mariam conceived her fourth pregnancy, a scan revealed she was carrying another boy. She became disappointed, blamed her husband for not giving her a girl, refused antenatal care, skipped meals, and even thought of abortion.

This situation brought serious distress to the family. Peter worried about Mariam's health, the unborn child, and the growing tension in their home. He struggled to comfort her as she withdrew from family support and ignored medical advice.

Task

(a) (i). Using genetic diagrams, explain to Mariam why she should not lose hope of having a girl child.
(ii) Explain the likely consequences of Mariam's actions after the pregnancy scan.
(b) Suggest what can be done to help Mariam stay healthy and have a safe delivery.

SECTION B

PART 1: ECOLOGY, SOIL AND DIVERSITY OF LIVING THINGS

Item 16

Over the past decade, Mabira Forest has faced increasing human pressure. Large sections have been cleared for charcoal burning and sugarcane plantations. Communities have also encroached for settlement and burnt vegetation for subsistence farming.

As a result, rainfall in surrounding areas has become unreliable, temperatures have risen, reduced crop yields, and wild animals such as monkeys now invade nearby gardens. Concerned about these changes, community members fear for their environment and livelihoods.

Task

(a) Explain how the different human activities have contributed to the environmental changes observed.
(b) (i) Suggest practical and sustainable solutions to reduce degradation of such an ecosystem.
(ii) Explain why it is important to conserve such an ecosystem.

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Item 17

Kayemba purchased a fertile piece of land in Kiboga for maize cultivation. He cleared the bush, cut down all trees, and burned the vegetation before planting maize. His harvests were excellent for the first two years. To maintain high yields, he applied herbicides to control weeds, pesticides to protect his crop from army worms, and insecticides to kill termites in the anthills that were destroying his maize.

However, in the third year, his maize harvest declined sharply. Kayemba was disappointed and unsure of the cause of the poor harvest.

Task

(a) Explain to Kayemba the causes of the decline in his crop harvest.
(b) What should Kayemba do to improve the crop yield in his garden.

Item 18

A five-year ecological study was conducted around Lake Kyoga to monitor changes in organisms. Researchers observed that water hyacinth spread extensively, forming dense mats on the lake surface. At the same time, fishermen used indiscriminate nets, and a nearby factory discharged hot waste fluids into the lake. Over the years, the cover of water hyacinth increased, while the populations of small fish and fish-eating birds steadily declined.
The results of the study showing the relationship between the three organisms in the ecosystem were recorded in the table below.

Year	Water Hyacinth Cover (%)	Small Fish Population	Fish-eating Birds
2020	10	5000	120
2021	20	4200	100
2022	35	3000	80
2023	50	1800	50
2024	65	900	20

Table 1: Population trends around Lake Kyoga (adapted from Ogutu-Ohwayo et al., 2013), African Journal of Aquatic Science

Tasks

(a) (i) Using Table **1**, explain how the change in the percentage cover of water hyacinth influenced the observed change in the population of fish and birds.
(ii) Explain how the observed human activities might have influenced the fish population over the years.
(b) Suggest measures to restore balance in this ecosystem.

Item 19

Mr. Sserunjogi owned 8 acres of pine trees in Nsagu village. The surrounding community used to receive reliable rainfall throughout the year. After discussions with friends, he was advised to clear the forest and plant mairungi (miraa), which was considered more profitable than pine. Two years ago, he accepted the advice, cleared all the pine trees, and planted miraa.

Since then, the community has experienced reduced rainfall, floods in valleys, strong winds destroying property, increased mosquito bites, and water in the community well and stream turning brown. The concerned L.C.1 chairman consulted the district environmental officer, who linked these problems to the clearing of the forest. Mr. Sserunjogi, however, denied responsibility.

Task

(a) Explain to Mr. Sserunjogi how his action led to the problems in the community.
(b) (i) Explain to Mr. Sserunjogi how his previous plantation was of great value to the community.
(ii) Suggest to the residents of Nsagu what they could do to restore the benefits they enjoyed before Mr. Sserunjogi's action.

Item 20

During the rainy season, Bwaise often experiences severe flooding. Heavy rains quickly overwhelm the area, sweeping away goods, damaging roads and creating deep potholes, and leading to outbreaks of waterborne diseases.

Investigations show that the problem is worsened by construction of buildings in wetlands, poor drainage systems, uncontrolled dumping of plastics in the area, and sewage released into runoff whenever it rains. The National Environmental Management Authority (NEMA) blames the Kampala Capital City Authority (KCCA) and other government agencies for allowing activities that degrade the environment.

Task

(a) Explain to the people of Bwaise how their activities have contributed to the problem they face whenever it rains.
(b) Suggest strategies to KCCA to prevent the recurrence of the problems in Bwaise whenever it rains.

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PART 2: METABOLIC PROCESSES IN MAMMALS

Item 21

Sarah is a popular Ugandan musician who has developed unhealthy lifestyle habits. She smokes cigarettes and shisha almost every day, and she frequently eats deep-fried chips and chicken seasoned with excessive salt. Over time, these habits have begun to affect her health.

She now struggles with difficulty in breathing, chest pain, constant fatigue, and noticeable weight gain. Upon medical examination, doctors found that she had respiratory and kidney problems, and fat deposits in her main body arteries. The doctors linked her condition to her lifestyle, but Sarah denied this, believing instead that she was being bewitched by fellow musicians.

Tasks

(a) Explain to Sarah how her lifestyle could have led to the problems she is facing now.
(b) Without going back to the hospital, suggest what Sarah can do to overcome the problems she is facing now.

Item 22

Ayebale a market vendor in Hoima city has been experiencing several health challenges. Concerned family members advised him to seek medical care at Hoima Referral hospital.
At the hospital, before making a diagnosis, the medical doctor recorded the patient's dietary history through interviews. The estimated daily intake compared to recommended values is shown in Table **2**. On further examination, several medical tests were conducted, and the results are shown table **3**.

Food Value/Nutrient	Adult recommended daily intake	Patient's Intake
Water	2–3 litres	1.0 litre
Proteins	50–70 g	25 g
Iron	8–18 mg	5 mg
Salt (Sodium)	<5 g	10 g
Fats	Moderate	Very high
Vitamins	Adequate	Low

*Table **2**: Patient's Dietary History*

Parameter	Normal Value	Patient's Value
Blood pressure	120/80 mmHg	160/100 mmHg
Heart rate	60–100 beats/min	110 beats/min
Urine output	1.5–2.0 litres/day	0.5 litres
Haemoglobin level	13–17 g/dL	10 g/dL
White blood cell count	4000–11000 cells/L	3000 cells/L

*Table **3**: Medical test results*

Tasks

(a) Using both Table **2** and Table **3**, explain how the dietary behaviours of the Ayebale are responsible for the observed health conditions.
(b) Recommend dietary remedies that can help Ayebale to manage his conditions so as to live a better life.

Item 23

Kabelo from South Africa House at Buddo S.S was the usual winner in long-distance races, while Mwansa from Zambia House often came second. Four days before the 2026 inter-house competition, Mwansa trained twice daily and ate posho and beans. Kabelo, confident of victory, did little training and ate mainly eggs and water.

In the 25-lap final, Mwansa won for the first time. Kabelo appeared weak and developed muscle pain within the first 10 minutes, which continued after the race. When asked about his poor performance, he explained that the pain had affected his running.

Task

(a) (i) Explain to Mwansa why he won.
(ii) Explain to Kabelo why he failed to win.
(b) Advise Kabelo on how to:
(i) Recover from the pain experienced.
(ii) Improve on his chances of winning in the next competition.

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Item 24

During a New Year's festival in Jinja District, Kato of blood group **A** and Namakula of blood group **B** were involved in a motorcycle accident. Neither of them wore helmets, and they sustained severe injuries to the head, chest, elbows, and knees, losing a large amount of blood. Both became temporarily unconscious, struggled to walk and breathe, and their heartbeats grew weak.

They were rushed to Jinja Regional Referral Hospital, where doctors discovered their blood levels were critically low. Immediate transfusions were required, so the medical team tested the blood groups of three close relatives: Isabirye, Nabirye, and Waiswa, to identify suitable donors.

Relatives	Blood groups
Isabiyre	B
Nabirye	A
Waiswa	O

Task

(a) Explain how the accident affected the normal functioning of Kato's and Nakato's bodies.

(b) (I) With reasons, identify the most suitable blood donors for Kato and Nakato from their relatives.

(II) Suggest practical ways Kato and Nakato can manage their lives after recovery to improve their future wellbeing.

553/2/3 BIOLOGY PAPER 2/3 (PRACTICAL)

1. Scientific Investigations in Biology

Item 25

Musa an Irish potato grower has two gardens in different regions **J** and **K** each near a community well where he grows Irish potatoes of the same variety. The rain stopped in the two regions before Musa's crops had reached the flowering stage. He then started irrigating them using water from the nearby community well. His crops in region **J** became wilted with soft stems and the yields were very poor while those in region **K** continued to grow healthy and had good yields. Musa did not understand why he got poor yields from his garden in region J despite the fact that he irrigated the crops very well.

Task

You are provided with water samples **A** and **B** obtained from the two different community wells and specimen **T** obtained from Musa's plants. Design and carry out a scientific investigation on the water samples **A** and **B** using specimen **T**. Use your results to explain to Musa the difference in yields from his two gardens.

Your investigation should include the aim, hypothesis, variable, materials, procedures, results, analysis and recommendations.

(a) Aim, Hypothesis, variables and materials.

(b) Procedure of the investigation.

(c) Results.

(d) Analysis of results and recommendation.

Item 26

Susan wants to make a sweet snack from maize which can be easily digested when eaten. She has been advised by a nutritionist to use an enzyme **R** to break down the complex compound in maize, making it easier to digest at a temperature range of 35°C to 40°C. Susan has tried several times to make the snack but her customers complained that the snack is not sweet. When she consulted the nutritionist again, she was advised to create a suitable pH medium for the enzyme.

You are provided with substance **R** containing the enzyme solution and solutions **A, B,** and **C** of different pH media.

Task

Design and carryout a scientific investigation on solutions **A, B,** and **C** to determine which one of the solutions has appropriate pH medium for the enzyme and give advise to Susan on the solution to be used.

Your investigation should include the: aim, hypothesis, variables, materials, procedure, results, analysis and recommendation.

(a) Aim, hypothesis, variables and materials.

(b) Procedure and results of the investigation.

(c) Analysis of results and recommendation.

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Item 27

Namukasa a S4 student in Bukasa Secondary School has poor oral hygiene. she rarely brushes her teeth and her diet contains mainly sugary foods. Recently, she experienced severe toothache and this interfered with her daily activities. The pain prompted her to visit a dentist. Dental examination revealed multiple holes in some of her teeth. The dentist extracted two of her teeth. Namukasa now struggles to chew food properly.
You are provided with specimens **P** and **Q**, which are similar to the teeth extracted from Namukasa.

Task

(a) With a reason, identify the type of tooth each specimen is.
(b) Describe how specimen **P** is adapted to its function.
(c) Draw and label specimen **Q**.

Item 28

Kaudha, a talented athlete from Wandago Village in Buyende District, was recently involved in a motor car accident. She sustained severe injuries, including fractured and dislocated bones in her back, particularly in the thoracic and upper abdominal regions. These injuries left her unable to participate in her favourite sports again.

You are provided with specimens **O** and **P**, which are similar to those that were affected in Kaudha's back.

Task

(a) With reasons, identify specimens **O** and **P**.
(b) Describe how the specimen from thoracic region is suited to its functions.
(c) Draw and label the specimen which was obtained from the upper abdominal region.

Item 29

Mr. Wambede in Namakwekwe sub-county started a primary school and one of his classroom blocks was constructed using wood. After six months, Mr. Wambede realised that the wood of the classroom block was partly destroyed with holes in the wood. Mr. Wambede had no money to construct a new classroom block.

Specimens **I** (housefly) and **J** (soldier termite) were some of the most common organisms collected by one of the pupils from the wooden classroom block.

a) With reason(s) in each case, identify any two common taxa to which specimens **I** and **J** belong.
b) Explain how the features on specimen **J** enabled it to enter and destroy the wooden classroom block.
c) Draw specimen **J** and label the structures which enabled it to enter and destroy the wooden classroom block.

END

We extend our heartfelt wishes to all learners for great success in the forthcoming UNEB examinations. May your dedication and hard work open doors to rewarding futures in Medicine, Surgery, Nursing, Dentistry, and other Biology-related fields. Continue to pursue excellence with confidence, and may your aspirations be fulfilled – Biology Department, Buddo Secondary School.

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TEST ITEMS FOR THE MEGA CBC '0' LEVEL BIOLOGY SEMINAR HELD ON 06TH JUNE, 2026 AT MUSANA VOCATIONAL HIGH SCHOOL-IGANGA CAMPUS.

DISCLAIMER

*These items are built in almost a similar style to that presented within the **UNEB** sample assessment materials.*
*However, these items have been built for classroom assessment **ONLY**. There can be no guarantee of the extent to which these items shall reflect in any other assessment materials learners may sit. We hope that schools and learners find these items useful in the preparations for this year's assessment, **2026**. However, we take **NO** responsibility for the relevance of this document to any examinations sat.*

UNIT 1: (THEORY) 553/1

E.C 2: Plant Biology (SECTION A ITEM 1)

Item I

Competence assessed: *Learners' ability to show understanding on how plants obtain and use nutrients to meet their requirements during which raw materials and products are carried to and from various organs involved.*

Topics: *Nutrition in plants, Transport in plants, Respiration in plants, Growth & development in plants and reproduction in plants (plant structures and processes involved)*

Item 1.0

John is a prominent farmer in Mbarara district. During the dry spell, he decided to grow beans in a water-logged swamp since he thought that the beans needed water. To his surprise after planting the seeds, only few seeds managed to grow into seedlings. These young plants developed yellow leaves and most of their roots rotted, leading to death of most plants. However, he observed that the maize plants grown in the upland had narrow hairy leaves which they would roll during day and unfold at night. Most maize plants survived the dry season and gave some yields.

Task

a) Explain how the swamp conditions affected plant processes leading to death of most bean plants.
b) Explain how the observations made on the maize plants ensured their survival.

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Item 1.1

A gardener planted crops in a well prepared garden. Before flowering, the plants were attacked by locusts which destroyed most of the young leaves, terminal buds and outer layer of the stems. The farmer noticed that the plants had become stunted as they were not growing at the expected rate.

After some time, the locusts disappeared and the plants resumed growing. however they had produced many branches, leaves, flowers and fruits to the surprise of the farmer. At the time of harvest, the farmer was able to get some yields.

Task

(a) ***Explain*** the effects of the locusts on the plants.

(b) ***Explain*** how the plants managed to behave the way they did when the locusts disappeared.

Item 1.2

Eddie is a pumpkin farmer in kitumba village. The village experienced a long dry season characterised by high temperatures, much sunshine and dry windy conditions. During the season, the hairy pumpkin leaves would droop (bend downwards) and flower petals remained closed for a longer part of the day but they would straighten and open during early morning hours respectively.

Task:

(a)**Describe** how the conditions experienced affected the functioning of the pumpkin plants which led to poor yields.

(b)**Explain** how the pumpkin managed to survive the conditions experienced

Item 1.3

Denis of recent acquired a piece of land that he used to plant peas, at the onset of the rainy season the garden flooded. After some time, the plants were showing stunted growth, while some leaves were yellowish and falling off prematurely. On investigation, he found out that plants had very short poorly developed roots that were rotten just like the outer stem layer. On consultation from the agriculturalist, he was given a chemical which he mixed with water and sprayed on the crops and also created drainage channels. Later, the plants were seen with many broad leaves, many long roots and started flowering and he obtained optimum yields.

Task;

(a) **Explain** how the observations made about the plants came about when the garden was flooded with water.

(b) **Explain** how the plants were able to survive and give optimum yields.

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E.C 4 (Item 2 Section A)

Item 2

Competence Assessed: The learners' ability to appreciate how a human body coordinates various activities and adjust to ensure normal functioning of body systems.

Topics: Coordination (nervous coordination, chemical coordination, receptor organs), excretion, and Locomotion.

Item 2.0

Annet's daughter has hearing impairment. When the daughter was diagnosed in hospital, the report indicated that one of the ear ossicles had a fracture, the ear drum had raptured and the cochlea was damaged. While in the hospital, Annet was advised to have a test for blood sugar since she was complaining of excessive thirst. The results indicated a higher sugar level than normal. Annet is so worried about her new health condition.

Task

a) **Explain** how the conditions reported in the diagnosis caused the daughter's impairment.

b) **Explain** what can be done by Annet to manage the new health condition that is worrying her.

Item 2.1

A 70-year - old woman who used to smoke tobacco complained of persistent joint pains and backache that made her walk with difficulty. She could not easily read the small words of the Bible as she used to. Her children took her for medical examination in a hospital.

During medical examination, as the doctor flashed penlight in her eyes. She kept blinking. On further examination. The doctor noted that she had a problem with her eye lens, and the distance between the cornea and retina was shorter than expected. Her also bones were also weak.

Task:

(a) **Explain** why the old woman could not easily read the small words in her Bible

(b) **Describe** how the responses by the old woman's eyes to the doctor's examination was brought about

(c) Advise the old woman on how she can manage the health condition that made her walk with difficulty.

Item 2.2

Donald joined a group of young boys who sniff petrol and smoke marijuana frequently. The group became known for crime, violence and causing chaos in trading centres.

Donald and his group members were one day surrounded by policemen and the policemen fired gunshots at them. This caused Donald's heart beat to increase suddenly and he ran very fast back to their home.

Task:

(a) What challenges do you think Donald may face if he continues associating with such a group?

(b) Describe how Donald's body coordinated and made him reach home.

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(c) Explain how Donald can avoid challenges associated with being in such a group.

Item 2.3

Peter and his friends were preparing supper while enjoying alcohol and marijuana as usual. After several hours of socializing and consuming the drugs, Peter decided to warm some milk. As he approached the saucepan on the stove, he accidentally touched it with bare hands but he didn't react in anyway as expected but the following day, he realized that he was burnt in the process. His friend Bosco who finds trouble in seeing objects at a distance decided to help him prepare breakfast and in the process he accidentally stepped on a hot charcoal and immediately limped.

Task:

a) **Explain** the implications that may arise from their habits

b) **Describe** how Bosco's body coordinated to overcome further damages.

c)**Explain** the possible causes of Bosco's visual impairment and propose suitable management strategies.

Item 2.4

Pretty, a s.4 student frequently urinates and feels thirsty often especially after eating sweet things and has a noticeable swelling in her lower neck. Despite being a short girl in class, she sits behind, since she experiences eye strain while copying work when seated very near the chalk board on the front seats of the classroom. These health conditions have affected her study and the parents are worried of her performance in the coming exams.

Task

(a)**Explain** possible **causes** of each of the **health conditions** present in Pretty.

(b)**Explain** to Pretty's parents how they can manage the health conditions present in their daughter.

E.C 5. (Item 3 Section A)

Competence assessed: The learner's ability to appreciate how traits are inherited in organisms, passed to generations through reproduction and are manifested as organisms grow.

Topics: Genetics/ inheritance & variation, Cell division, Reproduction, Growth & development.

Item 3.0

Joan and Paul were married for many years but had no child. They decided to go to hospital and the clinical laboratory results indicated that Joan had blocked fallopian tubes, cysts around her ovaries, damaged inner lining of the uterus and secreted low levels of follicle stimulating hormone(FSH). When Joan received treatment, the couple produced a child. However, the child's red blood cells have a sickle shape, he is retarded and falls sick frequently. This has caused stress in the family.

Task

a) **Explain** how the **observations** in the clinical laboratory report led to failure to have children.

b) Genetically show how the child's health condition came about.

c)How can the couple manage the child's condition?

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Item 3.1

A farmer grows red and white flowers for sale. One day, a friend told him that pink flowers were more on demand. He was advised to cross-pollinate his *pure breeding dominant red flowered plants* with *pure breeding recessive white flowered plants*, which he did. To his surprise, all the flowers were red and none was pink. He is now worried that he has lost his variety of white flowers. He needs your help.

Task:

Using genetic diagrams, **explain** to the farmer;

(a) Why he did not get pink flowers

(b) That he can still get the white flowers in the second generation

Item 3.2

Mary a s.3 dropout has a daughter and the parents have put her on pressure to reveal the father of her daughter. There are three men whom she claims could be the father of her daughter. When taken to courts of law, the judge in the paternity court ordered that all three men, daughter, and Mary should have blood tests. The results are:

Mary	**Type A**
Daughter	**Type O**
Man 1	**Type AB**
Man 2	**Type B**
Man 3	**Type O.**

However, the judge isn't satisfied, so he asks for the medical records of the people involved. He discovers that the little girl cannot distinguish between red ripe apples and green raw apples. Men 1 and 2 also have the same health problem as the daughter; Man 3 has normal colour vision, as does the mother.

Task.

(a) Using your knowledge of Genetics determine the rightful biological father of the daughter.

(b) Advise the parents on how to take care of their daughter with such a health condition.

Item 3.3

A research institute based in a certain community has two clear mandates;

1. *Sensitize the population on how to curb the spread STDs/ STIs*
2. *Provide specimens for study in Science learning institutions.*

The organization is working on a project to breed cockroaches for use in institutions for study purposes as specimens. They should however understand the stages of development of the specimens before identifying the right breed to multiply for supply in institutions.

Research has shown that specimens with medium-sized wings are appropriate for study purposes. However, the gene for short wings is recessive to that one for long wings.

When the researchers crossed a short-winged specimen with a long winged one, all the products had long wings. This surprised them and has prolonged the research.

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Task:

(a) Using appropriate illustrations, explain;
   (i) How the research results were obtained from the two specimens used? **(Trial)**
   (ii) The stages of development undergone by the specimen.

(b) How can the organization advise the community in line with their first mandate?

Item 3.4(Trial).

Tina and Willy were close friends since their high school and campus, finally decided to get married after campus. It has been 10years now, and they have 5 children all boys. John the last born, his blood is unable to clot in case of any injury while Jimmy their second born has white hair and pink eyes. At the hospital, the doctor told them, their children's condition was inherited from the them. However, Willy is claiming John and Jimmy are not his children since their situations are different from others. Willy has also advised Tina to Abort in case she gets pregnant claiming that he is tired of her producing only boys.

Task

(a) Genetically **explain** to Tina and Willy how John's condition came about and convince them that there is still a possibility of producing a baby girl.

(b) How can Tina avoid the risk of getting into a situation that will need her to take Willy's advice?

(c) Explain the challenges most likely to be faced by Jimmy and Tina if she follows Willy's advice.

Item 3.5(Trial).

The Ambition Mission (U), is a Non-Government Organization that was established in a given community which has high cases of teenage pregnancy and miscarriages. The organization has two clear mandates to execute in the community. Namely;

(i)	*Educate teenage girls on reproductive health, with emphasis on menstruation as a land mark process in adolescent girls*
(ii)	*Promote awareness on STDs especially HIV/AIDS, antenatal and postnatal care to promote a healthy living.*

The organization does its work through meetings and camps with the youths and other groups to sensitize them in line with the mandates above.

Task:

(a)***Explain*** how the land mark process in the first mandate of the Organization occurs in adolescent girls.

(b)How important is the second mandate to the community.

(c) Describe the challenges faced by people with the STD focused on in the second mandate and how to overcome it.

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E.C 1 (SECTION B PART 1, ITEM 4 AND 5)

Diversity of organisms & sustainability of natural resources

Competences assessed: *The learner's ability to appreciate diversity of organisms & sustainability of natural resources [diversify of organisms, soil, pollution & conservation].*

Topics: Introduction to biology, Classification, Cell biology, Viruses, Insects, Flowering plants, Ecology; i) Concept of ecology ii) Food webs & food chains iii) Community interactions iv) Human & natural environment and Soil.

Item 4.0

People living near a certain wetland use poison to get fish, have destroyed most of the papyrus vegetation to make mats on a large scale and also to clear most of the land for large scale rice growing.

The environment officer has warned them about the likely environmental challenges if they continue with such actions.

Task

(a) Explain how the actions of the residents are likely to cause environmental challenges.

(b) Why is it important to keep that natural resource undisturbed?

Item 4.1

Last year, an investor decided to construct a fertilizer factory near the lake, where waste materials from the factory would flow. After some time, the residents observed reduction in fish caught from the lake, a rapidly growing weed on the surface of the lake, disappearance of birds that used to stand on the lake shore and frequent suffering from water borne diseases.

Task

(a) **Explain** how the challenges were brought about by the investor's project.

(b) **Explain** what can be done to overcome the challenges.

Item 4.2

Residents of kasokoso village used to dump their domestic wastes in the nearby swamp. The fresh vegetation of the swamp together with the dumped wastes allowed interactions of different living things.

An investor filled part of the swamp with murram and constructed a factory. The factory directs its wastes into the stream in the swamp. The residents and entire natural community of organisms no longer enjoy the benefits of the swamp.

Task

(a) **Explain** how the investor's actions denied the environment and its residents the benefits they used to get from the swamp.

(b) Suggest the importance of conserving such areas described in the scenario.

Item 4.3(Trial)

People in Namagoma village carry out different activities in different parts of the village as follows.

Most farmers burn plants residues after harvest in preparation for next season, some deposit sewage into the only water source in the area, while others heavily depend on the only forest for timber and others use non-selective weed killers.

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Recently the village started experiencing a lot of challenges including low crop yield, wild animal attacks, property destruction from strong winds and swimmer's itch and swollen stomach among children are common.

Task

(a) To what extent are the challenges experienced in the area attributed to the people's activities.

(b) What can people do to overcome their challenges?

Item 4.4.

In a hilly area with scattered trees, farmers constantly did up and down the hill to grow crops, cut down the trees for charcoal, are engaged in brick laying and often graze large herds of their cattle on the hill. During heavy rains, the area faces mudslides and flooding in the valleys. Also the farmers in the area are complaining of the reduced crop yields and the residents are frequently suffering from illnesses.

Residents attribute these to the activities happening on the hills.

Task

(a) Show how the farmers activities have resulted into the challenges faced during heavy rains and propose suitable solutions.

(b) Point out the benefits of conserving such areas.(Trial)

E.C 3: Animal biology (ITEMS 6/7 OF SECTION B)

Competencies: *Understand how mammals (animals) obtain & use nutrients to meet their energy requirements during which raw materials and products are carried to & from different organs involved.*

Topics: *Nutrition in animals, Transport in animals, Respiration in animals, Gaseous exchange in animals, Excretion in animals, Growth & development in animals.*

Item 6.0

Joshua, decided to compete in a **10000m** race when he was fasting. During the race, his heartbeat, breathing rate and sweating increased. He also felt weak and had muscle pain. After the race, he breathed deeply and rapidly. He later took a meal of posho and after some time, he regained the energy.

Task

(a) Explain the processes that the meal he took went through to benefit him.

(b) How did his body manage to overcome the challenges that he faced during the race?

Item 6.1

Peter has been sitting for long hours while smoking for many years. Recently, he became sick and the doctor's examination showed that he has large pores between the glomeruli and Bowman's capsules of kidneys, broken alveolar walls and fat deposits in the main arteries in the body

Task

a) **Explain** how the conditions in the doctor's examination report led to his sickness.

(b) What advice can you give to Peter to manage his health conditions?

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Item 6.2

A **40**-year old school secretary enjoys a lot of junk foods and sugary drinks and also sits for longer part of the day in office. He also often hides in his office and smokes tobacco. He experiences swelling of the feet and his teeth have turned brown. Lately, he experienced shortness of breath and general body weakness and was taken to the hospital for medical check-up. The medical results showed that the school secretary was overweight, had hypertension and also had some of his air sacs blocked. He was advised to start medical treatment.

Task:

(a) **Explain** how the conditions experienced by the school secretary are as a result of his lifestyle.

(b) **Explain** how the school secretary can overcome the conditions in his body to live a normal life.

Item 6.4

Jayden, a 3-year old boy of blood group **B** was weaned at 2 years. Since weaning, he has been feeding majorly on rice and porridge.Whenever he gets injured, he always takes long to get healed. Jayden's medical records indicate that he frequently suffers from infections and cough. He also has reddish hair and scaly skin. Due to these conditions, his mother prefers to keep him indoors especially in the morning and only brings him out after 11:00 a.m. when the day is warm.

Jayden became so weak and the mother took him to hospital, At the hospital, it was also noted that he passes out an abnormally small volume of yellow urine, was severely anaemic and with weak bones. Jayden was recommended for a blood transfusion but the only safe blood available in the hospital was of group **A**. The mother wondered why the hospital could not carry out transfusion using the available blood.

Task

(a) Explain the causes of Jayden's health condition.

(b)Suggest what can be done to improve jayden's health condition besides taking him to hospital

(c)**Explain** to jayden's mother why the available blood could not be given to Jayden.

Item 6.(Trial)

Joyce has been enjoying to eat deep fried foods while living a sedentary lifestyle. Recently she was not feeling well and she visited a nearby hospital. Her medical report was as follows;

Body weight of 90kg and height of 1.72m
Her blood pressure was 130/90mmHg
Complained of chest pain and swelling of the limbs

N.B *Normal BMI is 18.5-24.5, BMI above 30 is obese, normal blood pressure is 120/80mmHg.*

Task

(a) **Explain** the results in Joyce's report.

(b) What can she do to improve on her health?

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UNIT 2: PRACTICALS (533/2/3)

Scientific inquiry and investigation processes

Item 1

A company treats biodegradable waste (garbage) into non-harmful substances. In the process, a liquid with a bad smell is first produced from the waste. The company then uses an enzyme to decompose the liquid thereby reducing the bad smell and the gas is produced but the ***process is slow***. The company has been advised to create a suitable PH medium that can help the enzyme speed up the rate of decomposition. Currently, there are three different solutions on the market that can create different PH; **W**, **X** and **Y**. The company needs to choose one of the solutions that gives the most suitable PH medium for the enzyme.
The more the bubbles are produced, the faster the rate of decomposition of the liquid.
You are provided with solution **S** which contains the enzyme, liquid **T** from the garbage, and solutions **W**, **X** and **Y** of different PH media.

Task:

Design and carry out a scientific investigation to determine which of the solutions **W**, **X** and **Y** provides a suitable PH medium for the decomposition of liquid **T** by the enzyme and give appropriate recommendation to the company.
Your investigation should include the; aim, hypothesis, variables, materials, procedure, results, analysis and conclusion.

Item 2

A farmer observed that there were pests in his two gardens; **S** and **Q**. He applied the same pesticide from a good source to the gardens under different conditions, and all the pests disappeared. **Table 1** shows the conditions under which the pesticide was applied.

Table 1

Garden	Condition for application of the pesticide
S	Pesticide applied in the morning when the temperature was 27°C
Q	Pesticide applied in the afternoon when the temperature was 40°C

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After a few days, all the plants in one of the gardens dried-up while those in other garden remained healthy. When he uprooted some dried-up plants and cut their tubers, he observed that all their tubers had changed colour from white or yellow to red or pink. The change in colour was due to the pesticide.

The plants dried because they absorbed large amounts of the pesticide.

When the plant tissue absorbs the pesticide, the colour of the tissue changes. The more the pesticide absorbed, the greater the pink or red colour becomes. Maximum Absorption of the pesticide is attained after at least 30minutes from the time of its application.

The farmer wishes to know the time of the day to apply the pesticide to ensure his plants remain healthy.

You are provided with solution **A** and **B.** Obtain the pesticide by mixing $1cm^3$ of solution **A** with $4cm^3$ of solution B to make $5cm^3$ of the pesticide. You are also provided with plant tissue **Z** similar to the tissue of the plants that were sprayed.

Task

Design and carry out a scientific investigation to determine the difference in the rate of absorption of the pesticide by the plant tissue at different temperatures in the scenario.

Use your results to advise the farmer on the right time of the day (morning or afternoon) to apply the pesticide.

(a) Aim, hypothesis, variables and materials.
(b) Procedure of the investigation
(c) Results, analysis and conclusion
(d) Explanation and advice to the farmer.

Item 3

Sarah prefers to buy oily junk foods from the school canteen which she depends on for all meals of the day and eats at least an orange a day. One month later, Sarah is observed to walk very slowly at all times, she cannot participate in P.E activities, her arms and legs became smaller. She visited the school nurse claiming to be having malaria and that she wants to go home. The nurse examined her and advised her to start eating school foods to improve her condition. Sarah does not believe the nurse and insists on going home.

You have been provided with solutions **D** and **E** which are extracts from school foods and the canteen foods respectively.

(Solution **D** is school food extract mixture and Solution **E** is canteen food extract mixture)

Task:

Design and carryout a scientific investigation(s) on the two samples and use the results to explain to Sarah the cause of her condition and why she should eat school food.

(a) Aim of the experiment, hypothesis and variables in the experiment
(b) Procedure for the experiment.
(c) Explain to Sarah the cause of her condition and why she should eat school food.

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Item 4

In Apara village, abnormal heavy rains were received, a fertilizer factory was destroyed and large amounts of ammonium based fertilizers were washed into the environment. The next one week was sunny. Joseph and Sarah are two farmers in Apara village. They had just planted beans, a week after the heavy rains, Joseph noticed that his garden *still had a lot of water*, some bean plants in his garden were drying up.

On the other side, the beans in Sarah's garden were looking so healthy and water had reduced. Sarah's garden is located on a side of the village where factory run-off water did not flow. Joseph wishes to understand why his crops are drying up yet those of Sarah are healthy.

You have been provided with random soil samples **L** and **M** collected from the gardens of Joseph and Sarah.

Task: Carryout investigations on the soil samples provided to find out which one was collected from Joseph's garden and to explain to him how the heavy rains and factory run-off water could have affected his crops and the environment.

Your design and investigation should include the following

(a) Aim, hypothesis and variables,
(b) Procedure for investigation
(c) Results
(d) Explain to Joseph how the heavy rains and factory run-off could have affected his crops and the environment.

Item 5

Rose is a vegetable vendor in Iganga market. She sells green vegetables and has many customers since her vegetables are always fresh because she keeps them dipped in water. However, one day she dipped her vegetables in two separate water samples **P** and **Q** collected from two different sources. After *30 minutes*, she observed that the leaves of vegetables in one of the water samples were bending and rolled while the ones in the other sample the leaves were upright and not rolled. This affected her sales that day since most customers did not buy the vegetables with rolled and bent leaves considering them not fresh.

You have been provided with specimen **X** whose tissues are similar to those of the vegetables, and Water Samples **P** and **Q** that Rose used.

Task. Carryout scientific investigations on the water samples provided to determine which of the water samples caused the vegetables leaves to bend and roll, and explain to Rose how the water sample affected the vegetables.

Your design and investigation should include the following:

(*Aim, hypothesis, variables, apparatus/requirements, procedure, observations, explanation and recommendations*)

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Structure and function of living things

Item 6

In a community, farmers have been cultivating coffee on a large scale but their yields have been declining. They were advised to change their practices so that they can solve the problem.

Unlike other farmers, John adopted the advice by establishing a garden of flowers near his coffee plantation to attract arthropods. He also used old cardboards to reduce water loss from the soil. Overtime, John's coffee yields improved. Meanwhile, other coffee farmers in the neighboring village wondered why their yields continued to decline.

Task:

(a)With reason(s), identify the smallest taxonomic group to which both specimens **J** and **K** belong.

Taxonomic group

Reason(s)

(b)Describe how the structures on one of the specimens enabled it to increase the coffee yields in John's garden.

(c) Using a drawing of specimen **J**, show the structures that enabled it to spread easily in John's coffee plantations.

Item 7(Trial)

Musa a 9-year-old boy suffered from an infection of the mouth that caused loss of some teeth in his mouth. He has been having difficulty in eating meat which is beginning to affect his health. The mother called the dentist and wants to describe to him over the phone the teeth that are missing in Musa's mouth in preparation for teeth replacement. You have been provided with specimen P and Q which represent the teeth missing in Musa's mouth.

Task

(a) Using observable features, identify specimens **P** and **Q**

(b) Explain how the specimens would help Musa be able to eat meat after he receives the replacement.

(c) Draw specimen **P** and label only the part(s) that would enable Musa to cut meat into small pieces.

Item 8(Trial)

Mark a young farmer weeds his cassava garden regularly, however he noticed one plant that keep's appearing in his garden just a few weeks after weeding. He also observed some birds around his garden that keep dropping faeces everywhere. Mark is wondering why this plant keep's appearing in his garden, he suspects that the birds could be responsible.

You are provided with specimen **K** which is part of the plant that keep's growing in Mark's Garden.

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Task

a) Using observable features, identify the plant part **K.**

b) Explain to Mark how the plants keep appearing in his garden and how the birds could be responsible for their appearance in the garden.

c) Draw and label specimen **K** illustrating the arrangement of seeds in it.

Item 9(Trial)

At Musana High School several plants were grown to beautify the school compound. The plants have put on several brightly coloured structures. Also Senior one students complained of noise from some insects that always associate with the plants. The senior one student proposed that the plants should be cut down.

You are provided with specimens **X** and **Y** which are structures obtained from different plants in the school compound.

Task;

(a)With reason(s), identify the plant organs **X** and **Y**.

(b)Describe how specimens are able to make many of insect crowd around the plant.

(c)Use a razor blade to cut specimen **X** longitudinally, draw it and label the gynoecium.

Item 10

Kadu was involved in a motor accident that he could no longer manage to stand upright, support his neck or do any kind of laborious tasks.

Upon diagnosis the orthopedic doctor discovered that several bones in the vertebral column were damaged some were out of position slightly.

You are provided with specimens **D**, **E** and **F** which resemble those that were damaged in Kadu's body.

(a) Using observable features identify specimen(s) **D, E** and **F.**

(b) Explain how each of the specimen is suited to its function.

(c) Draw the specimen that was obtained from the Kadu's neck and label.

We hope that you find this work helpful in your end of cycle assessment examinations.

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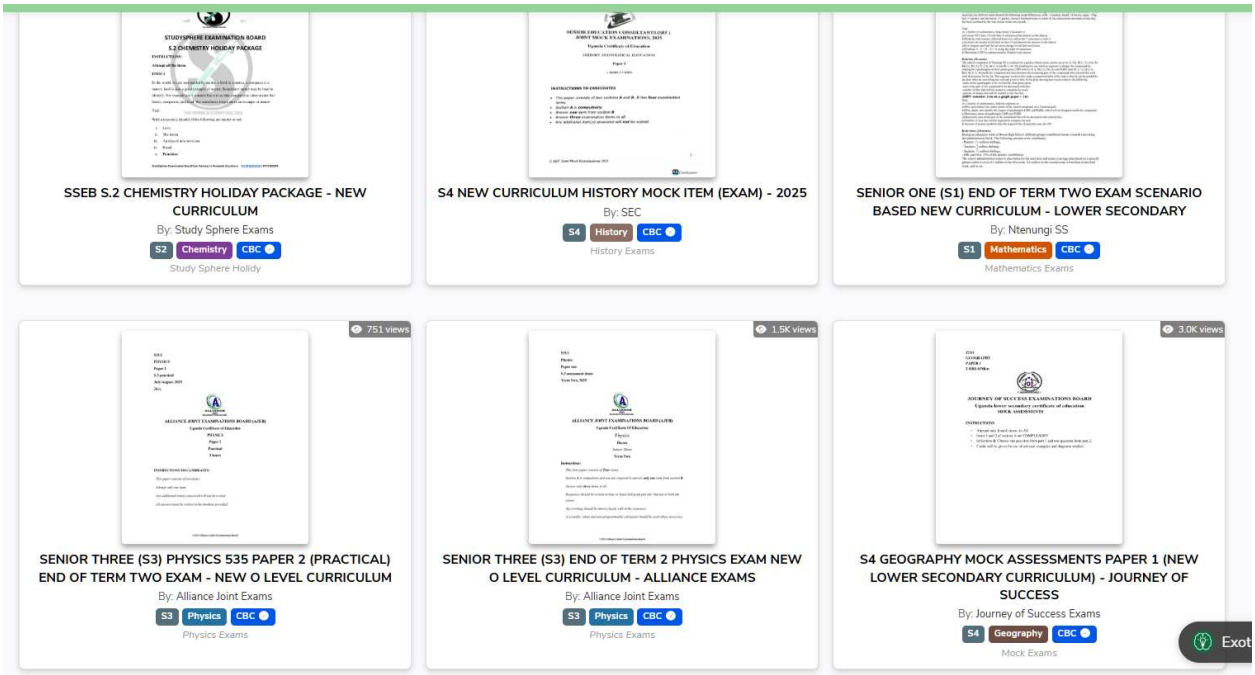
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