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Science Department

BIOLOGY PRACTICE ITEMS

O' LEVEL

2026

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ELEMENT OF CONSTRUCT 4 ITEMS
SECTION A (ITEM 2)

Human physiology.

The learner Appreciates how a human body coordinates various activities and adjust to ensure normal functioning of body systems.

Topics and sub topics examined.

- ***Coordination***
- ***Homeostasis***
- ***Osmoregulation***
- ***Locomotion***

Success criteria

The learner explains/describes how a human body coordinates various activities and adjust to ensure normal functioning of body systems. Set on Number 2 in the question paper

Item 1

Frank is a teenager who is in S4. He drinks alcohol and uses other related drugs to feel high. On several encounters, his parents have been counselling him to stay away from drugs. One day as he was boiling milk. He rushed to lift the saucepan that had milk as the milk was about to spill. Even after lifting the hot saucepan, without any insulator, he never felt pain. His grand mother got surprised. After putting the saucepan down, Frank experienced pain and rushed to put his hands in water to cool down.

Task.

a. Explain
   i. the challenges Frank is likely to face as a teenager.
   ii. Explain the reasons behind his failure to respond to the heat stimuli in the scenario.

b. What advice can you give to Frank and other teenagers so as to be productive members of society.

Item 2

Arthur smokes cigarettes, Marijuana, cocaine and shisha every day after work with his friends. During weekends he consumes alot of alcohol. He nolonger has enough money to pay school fees for his children who are appearing malnourished. He beats his wife every time and the wife is in

plans of divorcing him. Arthur recently has developed hypertension and diabetes plus other chest problems affecting his breathing rate. He appears weak and other and older than his real age.

Task

a. Explain the effect of Arthurs life style on

i. Him self.

ii. His family.

b. Explain how Arthurs Situation can be solved.

Item 3.

Kelly is a student in S4 who frequently urinates and feels thirsty. One day while on his way back home, he heard a very loud barking sound from a fierce dog. When he tried to run, his legs felt weak and he couldn't move them. When he forced himself to move he instead fell down. His heart pounded, eyes protruded and his heart beat increased

Task

a) Explain how Kelly's body coordinated from the time the loud barking sound was heard to the time he wanted to run a way.

b) Point out

i. his bodily metabolic disorder and explain its causes ii. Ways how he can manage his health condition.

Item 4

Peter is preparing a meal while enjoying a few drinks with friends. After several hours of socializing and consuming alcohol, he decides to warm some milk for his evening tea. As he reaches for the saucepan on the stove, he accidentally touches the side of the hot pan. He doesn't react in anyway but realises later that he got a burn in the process. ***Task:*** a) Explain

i. The key processes and body parts involved in that incidence, including the roles of sensory receptors, nerves, and the spinal cord.

ii. The biological problems that arise from Peter's alcohol consumption c. Describe

i. how the body normally overcomes such challenges through reflex actions ii. Describe potential strategies or interventions that Peter could take to minimize the risks associated with alcohol consumption in dangerous situations like cooking.

Item 5

Nanyonga, a senior three student normally watches films at the nearby trading centre up to midnight. On her way back home, she saw a fierce looking dog coming towards her. Immediately, she experienced an increase in the rate of heartbeat and breathing. She picked a stick and beat the dog.

Task

a. Describe how her body coordinated from the time she saw the dog up to when her arm muscles helped her to beat the dog.

b. What are the possible

   i. Effects of the student's way of life as described in the scenario above?

   ii. Ways through which the student can be helped to change her lifestyle?

Item 6.

Adrian, a S.4 teenager in one of the urban schools has recently been diagnosed with osteoporosis by an orthopedic doctor. One day while seated in class, he heard a very loud sound of a tear gas canister from the scuffle between the police and a demonstrating mob in town. His heart pounded, eyes protruded and he sweated profusely. He stood out to go and hide, but in the event, he fell down and fractured one of the bones in the legs.

Tasks

a) Expound on the likely effects of the condition diagnosed by the Orthopedic Doctor on Adrian's life.
b) Explain how Adrian's body coordinated from the time the loud sound was produced by the tear gas canister until he started sweating.
c) Explain how Adrian's body coordinated from the time the loud sound was produced by the tear gas canister until he started sweating.

Item 7

Derrick a 17-year-old boy, who is bright in class. However, as a result of his peers, he started taking alcohol and marijuana which prompted him to always escape from school, declined in performance, stealing plenty of cash from parents. One day when the subject teacher Mr. Ssematimba was organizing

the class, Derrick refused to sit at the back insisting that he could not see clearly on the chalk board while at the back.

Task

(a) Explain the reason as to why Derrick insisted not to sit at the back of the class room when the teacher was pushing him

(b) What are the likely outcomes of Derrick's Lifestyle?

(c) What advice can you give him?

Item 8.

Kelly is a student in S4 who frequently urinates and feels thirsty. One day while on his way back home, he heard a very loud barking sound from a fierce dog. When he tried to run, his legs felt weak and he couldn't move them. When he forced himself to move he instead fell down. His heart pounded, eyes protruded and his heart beat increased

Task

a) Explain how Kelly's body coordinated from the time the loud barking sound was heard to the time he wanted to run a way. b)

Point out

i. his bodily metabolic disorder and explain its causes

ii. Ways how he can manage his health condition. ***Item 9.***

Peter is preparing a meal while enjoying a few drinks with friends. After several hours of socializing and consuming alcohol, he decides to warm some milk for his evening tea. As he reaches for the saucepan on the stove, he accidentally touches the side of the hot pan. He doesn't react in anyway but realizes later that he got a burn in the process.

Task:

a) Explain

i. The key processes and body parts involved in that incidence, including the roles of sensory receptors, nerves, and the spinal cord.

ii. The biological problems that arise from Peter's alcohol consumption c. Describe;

i. how the body normally overcomes such challenges through reflex actions ii. Describe potential strategies or interventions that Peter could take to minimize the risks associated with alcohol consumption in dangerous ***Item 10.***

Nanyonga, a senior three-student normally watches films at the nearby trading centre up to midnight. On her way back home, she saw a fierce looking dog coming towards her

Immediately, she experienced an increase in the rate of heartbeat and breathing. She picked a stick and beat the dog.

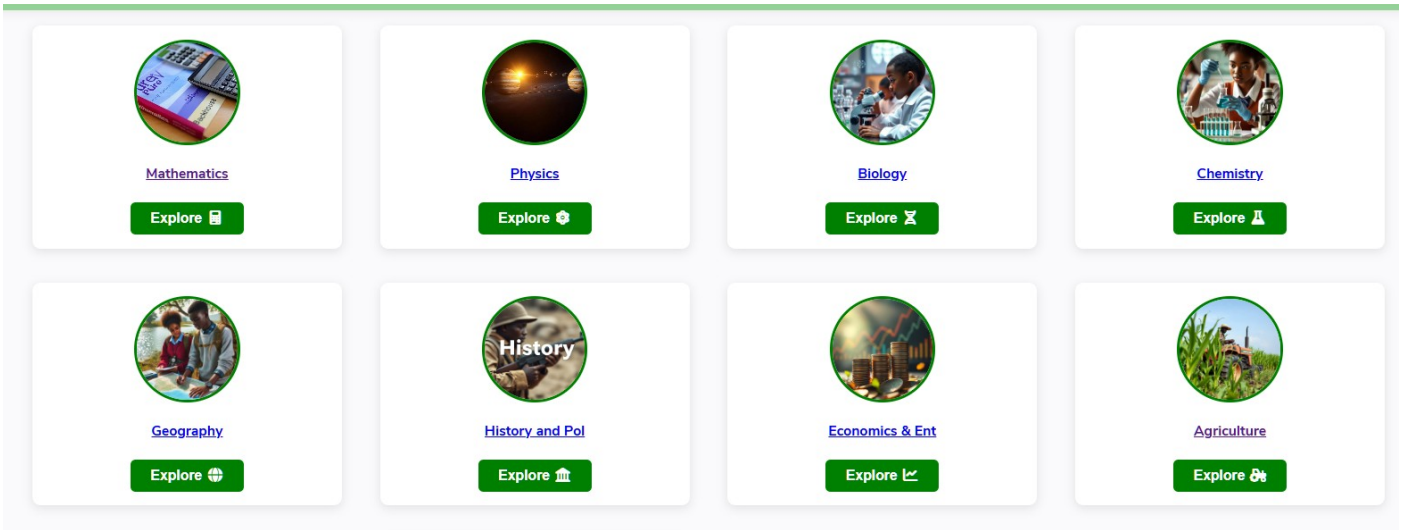
Task

a. Describe how her body coordinated from the time she saw the dog up to when her arm muscles helped her to beat the dog.

b. What are the possible

i. Effects of the student's way of life as described in the scenario above? ii. Ways through which the student can be helped to change her lifestyle?

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