

Name:

SIGNATURE: Stream.....

530/2

Uganda Advanced Secondary Certificate of Education

End of Term 1 Examinations

SENIOR FIVE

BIOLOGY

1 hour 30 minutes

Instructions

- All questions carry equal marks.
- Attempt any 3 questions from the questions below.

Item 1

During the research carried out by S.6 learners to find out the nutritional status of babies under 7 years old, many were discovered to look malnourished with few brown hair, swollen pot belly stomach and wasted muscles which was a sign of protein deficiency. They explained that these children lacked fibrous and globular proteins in their body whose structures are primary, secondary, tertiary and quaternary. S.5 learners who had no knowledge about the mentioned the structure of proteins got confused and they have approached you for help.

Task

- a) Point out any 3 properties of nutrient molecules above (03 scores)
- b) Explain to the learners the following structures of lacking nutrient to enable them resolve their confusion
 - i. Secondary structure (04 scores)
 - ii. Tertiary structure (03 scores)
 - iii. Quaternary structure. (02 scores)
- c) Explain the relevancy of the deficient molecules above in the bodies of living organisms. (08 scores)

Item 2

In the first lecture at university during study of pharmacology, the lecturer mentioned that bacterial cells are some of the major causes of diseases and have persisted because they exhibit resistance to antibiotics, so their major goal is invading drugs to kill the pathogenic bacteria, he went ahead and classified bacteria basing on their structure however most students failed to understand this since they had scanty knowledge about the structure of a bacterial cell.

Task

- a) As a S.5 learner with knowledge of cell biology, help the learners to recall the structure of the cell mentioned. (05 scores)
- b) Explain the roles of the above-mentioned structures to the survival of the organism. (07 scores)
- c) Describe the structure of the inner most membrane structure basing on the fluid mosaic model and state any 4 roles of the plasma membrane. (08 scores)

Item 3

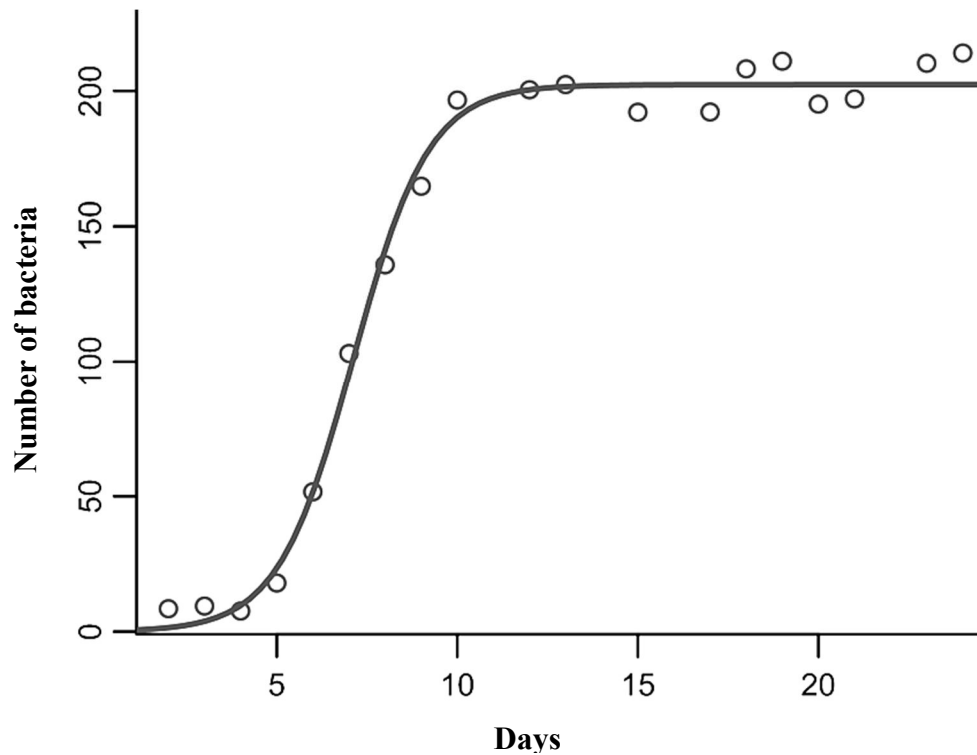
In the conference organized to sensitize and boost on agriculture, the presenter mentioned that without plants, man cannot survive because plants are the major sources of food in the ecosystem. Food is manufactured by the process of photosynthesis and therefore to increase food production, photosynthesis must be boosted using genetical engineering. He further mentioned that, this can be achieved by increasing the chloroplast count and their suitability to carry out photosynthesis however most S.4 learners never understood this since they lacked knowledge about the structure of the chloroplast yet they are interested in knowing so that they apply the knowledge to boost on the yields.

Task

- a) The learners have approached you for help to resolve. Describe for them the structure of the photosynthetic organelle mentioned above. (06 scores)
- b) Explain to the learners how the organelle is suited to its function of carrying out photosynthesis (11 scores)
- c) What are the necessary conditions for the manufacture of food in plants. (03 scores)

Item 4

During the ecological research study to determine the nature of population growth among organisms, S.4 learners conducted an experimental study in which bacteria was cultured and the number of bacterial cells were counted and recorded for 20 days. The learners obtained the results and these were represented graphically as below however, they have failed to explain their results which they have to present in the science conference.



Task

- These learners have consulted you for help, assist the learners by describing for them their plotted results observed above **(05 scores)**
- Give an explanation for the observed trend of population **(12 scores)**
- Identify any 3 factors responsible for the constant population number of bacteria in the eco-system. **(03 scores)**

Item 5.

During the doctor's presentation in the health awareness program, he mentioned that Lipids are one of the most essential molecules in the body of living organism however over consumption leads to heart diseases, high blood pressure and obesity. Due to the relevancy and health risks attributed to lipids, learners are eager and interested to know the structure of lipids and their respective roles in the body which were no mentioned during the speech. The learners have conducted research however they are puzzled up and have approached you for help.

Task

- a) Using your knowledge of chemicals of life, describe for the learners the structure of the mentioned molecules above (04 scores)
- b) Identify any 3 properties of molecules mentioned. (03 scores)
- c) Explain to the learners the relevancy of the essential molecules above in the body of living organisms. (08 scores)
- d) Why are lipids referred as better energy storage compounds (05 scores)

END

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