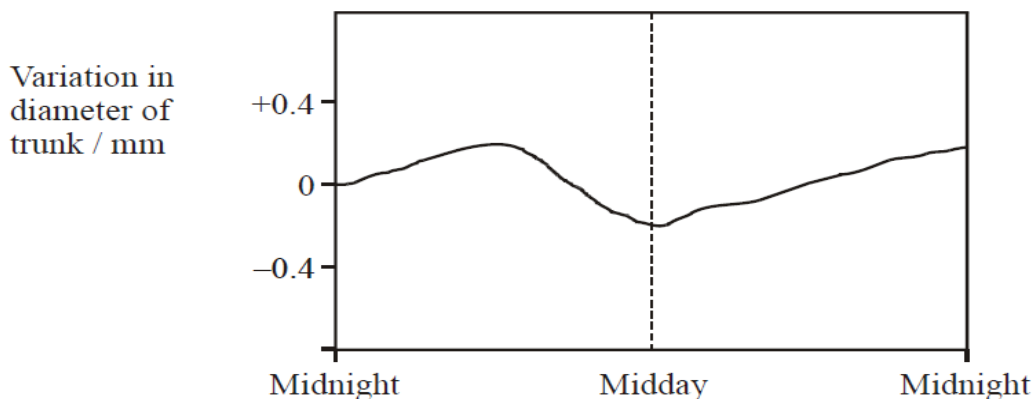


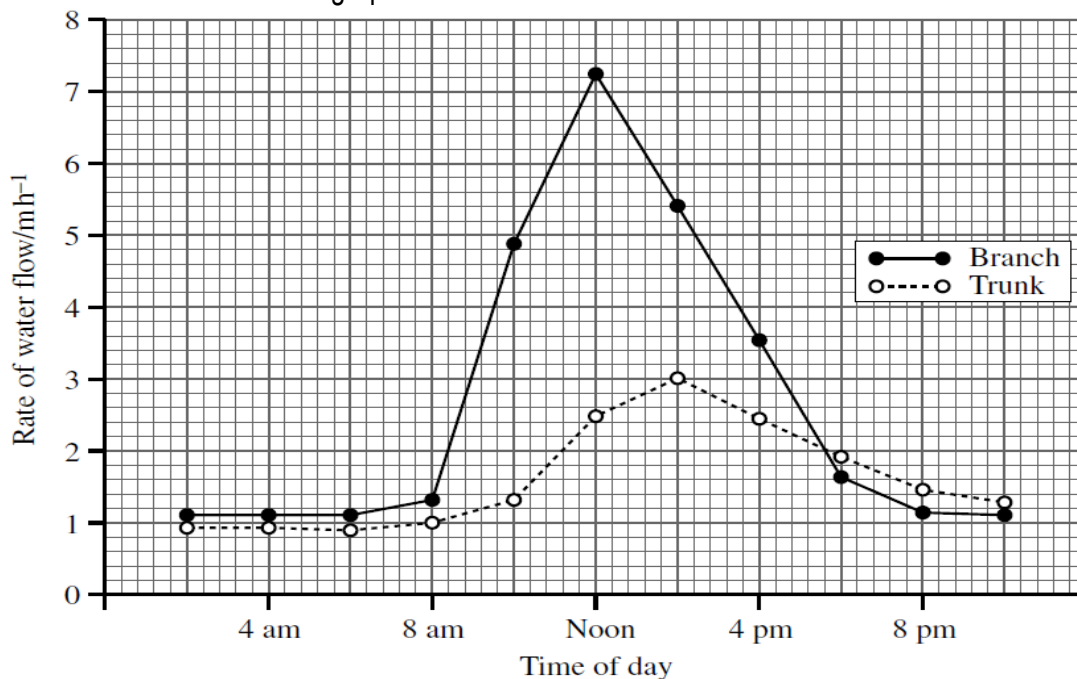
UMSSN A LEVEL INTERACTIVE BIOLOGY SEMINAR 2018

DISCUSSION QUESTIONS

1. The graph shows the daily changes in the diameter of the trunk of a pine tree.



- Explain why the diameter of the trunk is smallest at midday.
- Describe the adaptations of xylem and phloem to their functions.
- Discuss the role of each of the following in plants;
 - hydathodes
 - casparian strip
- The rate of water flowing through a branch of a tree and the tree trunk was measured over a 24-hour period. The results are shown in the graph below.



- Compare the rate of water flow through the trunk and branch.
- Explain the changes in the rate of water flow in the branch over the 24-hour period.
- Explain the difference in the rate of water flow in the branch and in the tree trunk.

UMSS NAMUGONGO

2. (a) How does a mutation lead to a non-functional enzyme?

(b) Describe the structure of transfer RNA molecule.

(c) Describe the features of a gene which enable it to code for a particular protein?

(d) Compare DNA replication and DNA transcription.

(e) With reference to the sickle cell allele, explain the term heterozygous advantage. MT. ST. HENRY'S MUKONO

3. (a) Distinguish between collagen and cellulose.

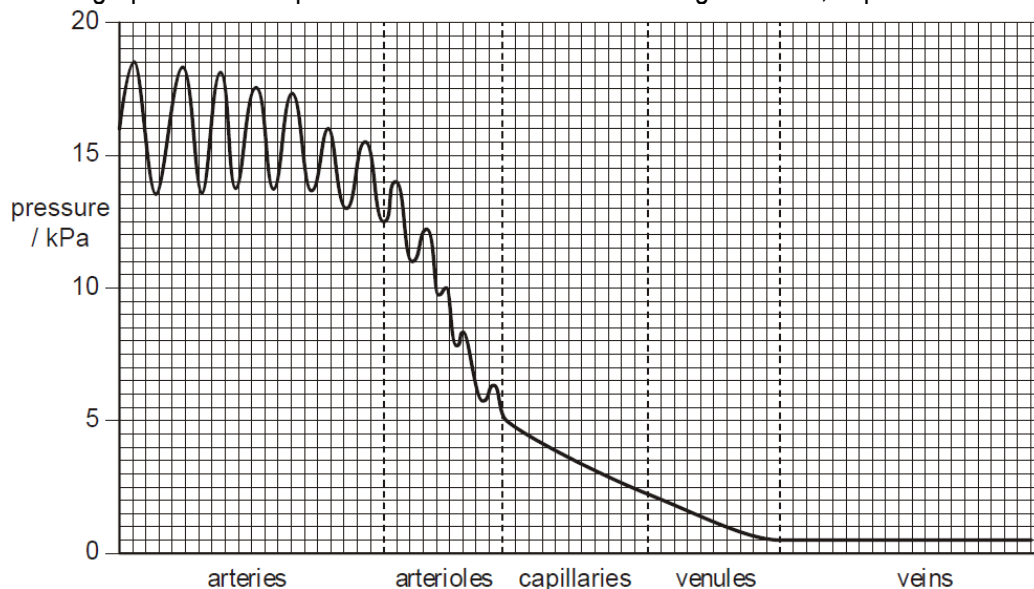
(b) How are each of the following biomolecules adapted for their functions;

(i) collagen (ii) cellulose (iii) Glycogen

(b) What is meant by Lactose intolerance?

ST. ELIZABETH NKOOWE

4. The graph shows the pressure of blood as it flows through arteries, capillaries and veins.



- Describe the changes in the pressure of the blood as it flows through the vessels.
- Explain what causes the rise and fall in pressure across arteries.
- What causes the drop in blood pressure as it flows from arteries to veins?
- Explain why it is important that the pressure is lower by the time blood reaches the capillaries.?
- Venous pressure seems too low. How is blood able to flow along the venous system?
- The table below shows the blood flow to various organs while a person is at rest and during strenuous exercise.

Organ	Blood flow at rest $/\text{cm}^3 \text{ min}^{-1}$	Blood flow during strenuous exercise $/\text{cm}^3 \text{ min}^{-1}$
Skeletal muscle	1200	12 500
Skin	500	1900
Kidneys	1100	600
Intestine	1400	600
Other	1600	1900
Total	5800	17 500

- With reference to the functioning of arteries, explain how blood flow to organs such as the kidneys is decreased during strenuous exercise.
 - Suggest explanations for the pattern of changes in the blood flow to the organs during strenuous exercise.
 - The skeletal muscle respire much more rapidly during strenuous exercise. Explain how this results in oxyhaemoglobin unloading more oxygen to the tissue.
- (g) What is the significance of red blood cells being impermeable to cations? **NAALYA S.S. BWEYOGGERERE**

- Describe the causes and effects of Coronary Heart Diseases.
 - Outline the risk factors of Coronary Heart Disease.
 - How is tissue fluid formed and returned to circulatory system?
 - Describe any factors that may cause accumulation of tissue fluid.
 - Discuss the benefit of fetal haemoglobin having high affinity.
 - Why do adults not keep with fetal haemoglobin?

JJINJA PROGRESSIVE S.S.

6. The figure shows *Phiomia*, an ancestor of elephants that lived about 35 million years ago and a modern African elephant.

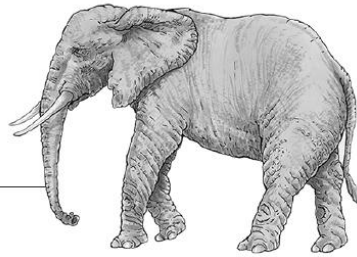
Phiomia

African elephant

Long nose



Trunk



(a) In the 1800s, Charles Darwin and J. B. Lamarck had different theories about how the long nose of *Phiomia* evolved into the trunk of the African elephant. Explain how the elephant's trunk evolved according to:

(i) Lamarck

(ii) Darwin

(b) What is Adaptation?

(c) Describe the process of Adaptation.

(d) Suggest explanations for the following evolutionary events:

(i) the continual failure to develop a vaccine to give long term protection against malaria plasmodia.

(ii) the incompleteness of the fossil record.

(iii) the high prevalence of sickle cell anaemia in the sub-Saharan Africa.

(iv) the development of industrial melanism in peppered moths (*Biston betularia*) in Great Britain in the mid 1800s.

ST. JOSEPH'S OF NAZARETH

7. (a) Discuss the functioning of each of the following parts of the kidney nephron;

(i) Bowmans Capsule

(ii) Proximal Convoluted Tubule

(iii) Loop of Henle

(iv) Collecting Duct

(b) How is the kidney nephron adapted to carry out its functions?

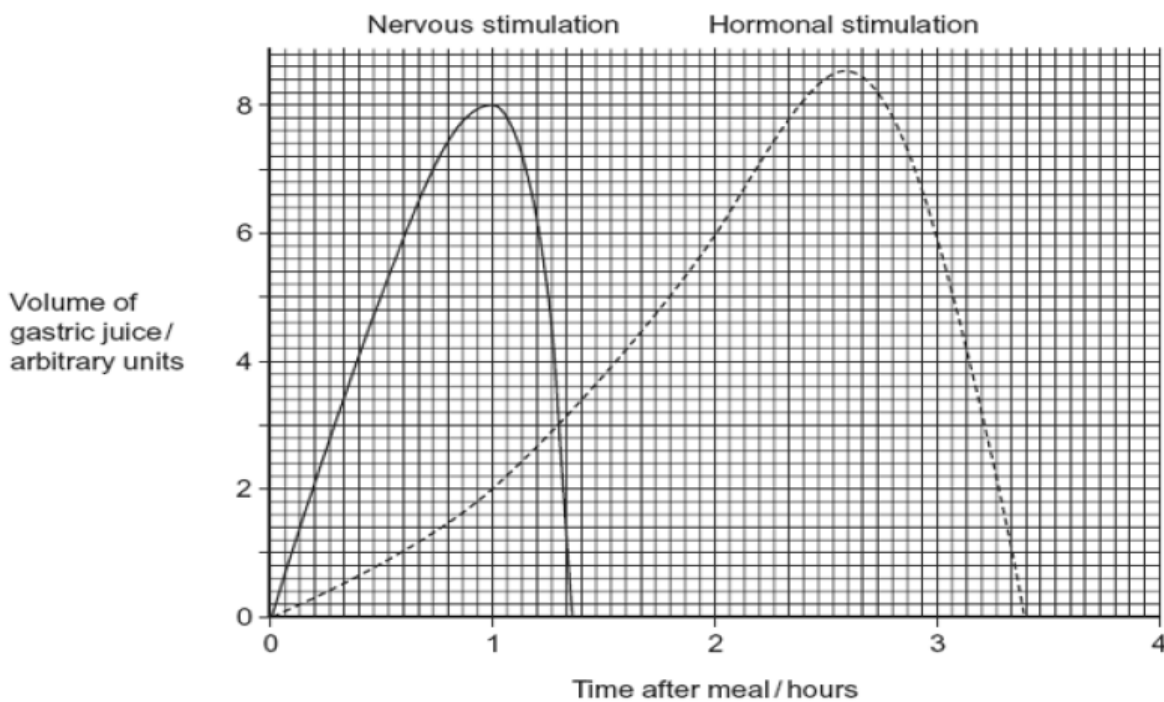
(c) What is meant by countercurrent hairpin multiplier?

(d) Describe the significance of the countercurrent heat exchanger in organs such as long limbs of birds.

NAMILYANGO S.S.

8. (a) Explain why release of digestive secretions in man should be controlled.

(b) Cells in the stomach wall release gastric juice after a meal. The graph shows how the volumes of gastric juice produced by nervous stimulation and by hormonal stimulation change after a meal.



(i) Compare the changes in volume of gastric juice shown by the two curves.

(ii) Describe the evidence from the graph that curve A represents the volume of gastric juice produced by nervous stimulation.

(iii) How are the changes shown by the graph brought about?

(c) The table summarises mechanisms of control of release of digestive secretions along different parts of the gut.

Part of gut	Control mechanism
Mouth	Nervous only
Stomach	Both nervous and hormonal
Ileum	Hormonal control only

Discuss the variation in the trend of control of release of digestive secretions. **ST. JOSEPH'S S.S. NSAMBYA**

9. (a) Discuss the nutritional groups of; (i) Bacteria (ii) fungi

(b) Describe the characteristic features of fungi.

(c) How do fungi differ from plants?

MPOOMA SCHOOLS MUKONO

10. (a) What happens in a neurone during; (i) a resting Potential?

(ii) an Action Potential?

(b) How does an Action Potential move along a Neurone?

(c) How does the Size of Stimuli affect a Nerve Impulse?

(d) Discuss the factors that affect speed of Nerve Impulse.

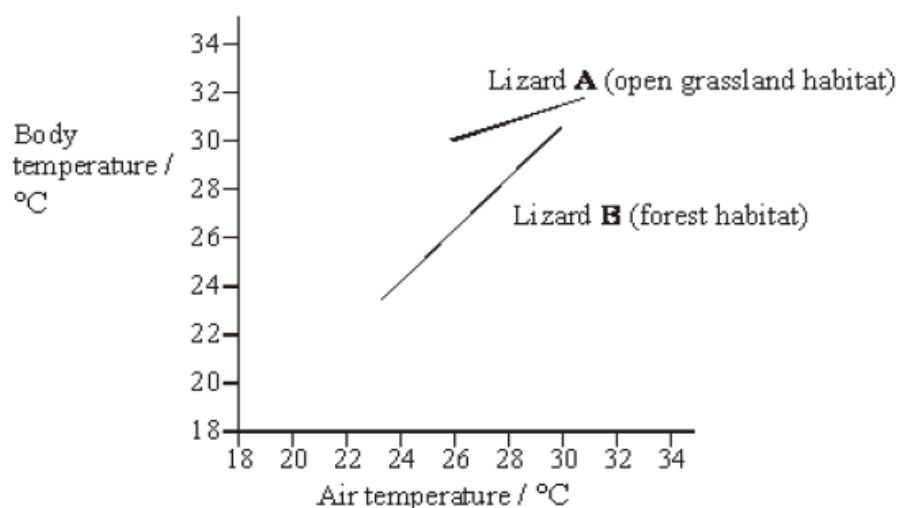
(e) What are the Properties of Synapses?

(f) How does Fast Twitch Muscle Fibres work?

(g) How does Slow Twitch Muscle Fibres work?

ST.LAWRENCE S.S. SSONDE

11. The graph shows results of an investigation into the relationship between air temperature and body temperature for two lizards living in different habitats. The investigation took place on a hot sunny day over a period of four hours



(a) Explain the relationship between the air temperature and the body temperature for lizard B.

(b) Suggest an explanation for the different pattern shown by lizard A.

(c) Lizard B moves more slowly when its body temperature is 24°C than when it is 28°C. Explain what causes the slower movements at the lower temperature.

(d) Discuss the physiological adaptations of a camel to survive in desert environment. **BILAL ISLAMIC S.S.**

12. Buffers are substances that regulate pH by releasing or accepting hydrogen ions (H⁺). Haemoglobin and amino acids act as a buffer in the blood.

(a) Describe how haemoglobin and amino acids act to reduce the concentration of hydrogen ions in the blood.

(b) Describe how the kidney tubules act to reduce the concentration of hydrogen ions in the blood.

(c) Discuss the causes of Bohr effect.

ROYAL COLLEGE BULOBA

13. (a) What is meant by positive feedback?

(b) Explain positive feedback mechanism during;

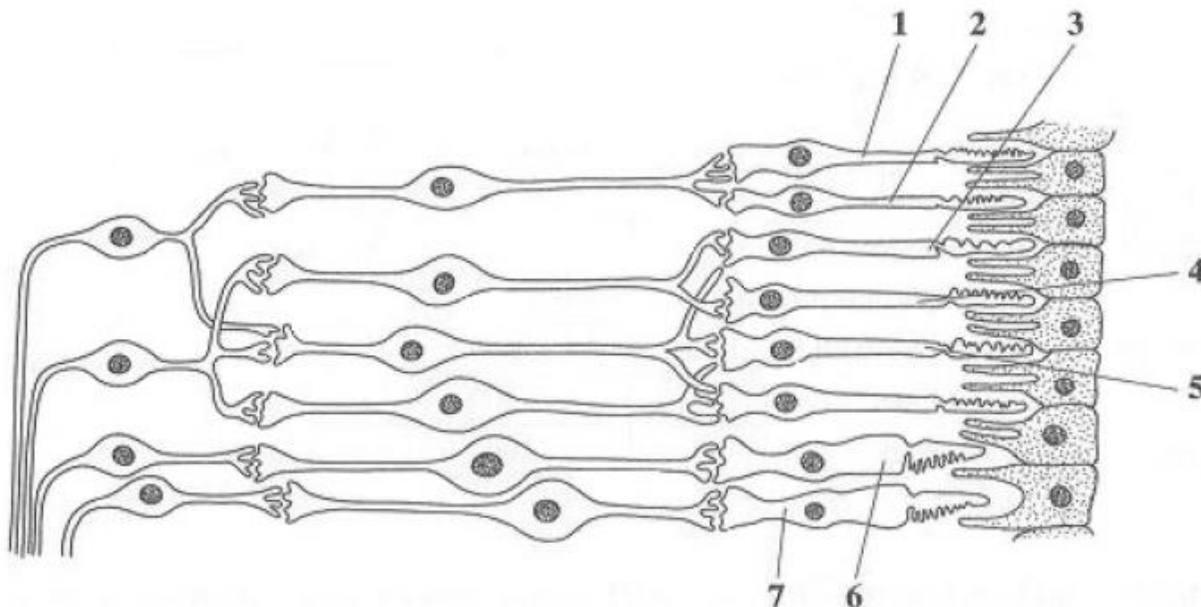
(i) Parturition (ii) Propagation of an action potential along the nerve cell

(iii) Reduction of blood pressure when a person loses substantial amount of blood

(iv) Activation of pepsinogen (v) Control of body metabolism after the high critical temperature .

KITANTE HILL

14. The diagram shows part of the retina in a human eye.



(a) Explain each of the following observations.

(i) When light falls on cells 1 and 2, only one spot of light is seen. But, when light falls on cells 2 and 3, two spots of light are seen.

(ii) When one unit of light energy falls on cell 3, no light is seen. But, when one unit falls on cell 4 and one unit falls on cell 5, light is seen.

(b) Cells of the same type as cells 6 and 7 are found in large numbers at the fovea. This results in colour vision with high visual acuity. Explain what causes vision using the fovea.

(i) to be in colour; (ii) to have high visual acuity.

(c) Explain the trichromatic theory of colour vision in cone cells.

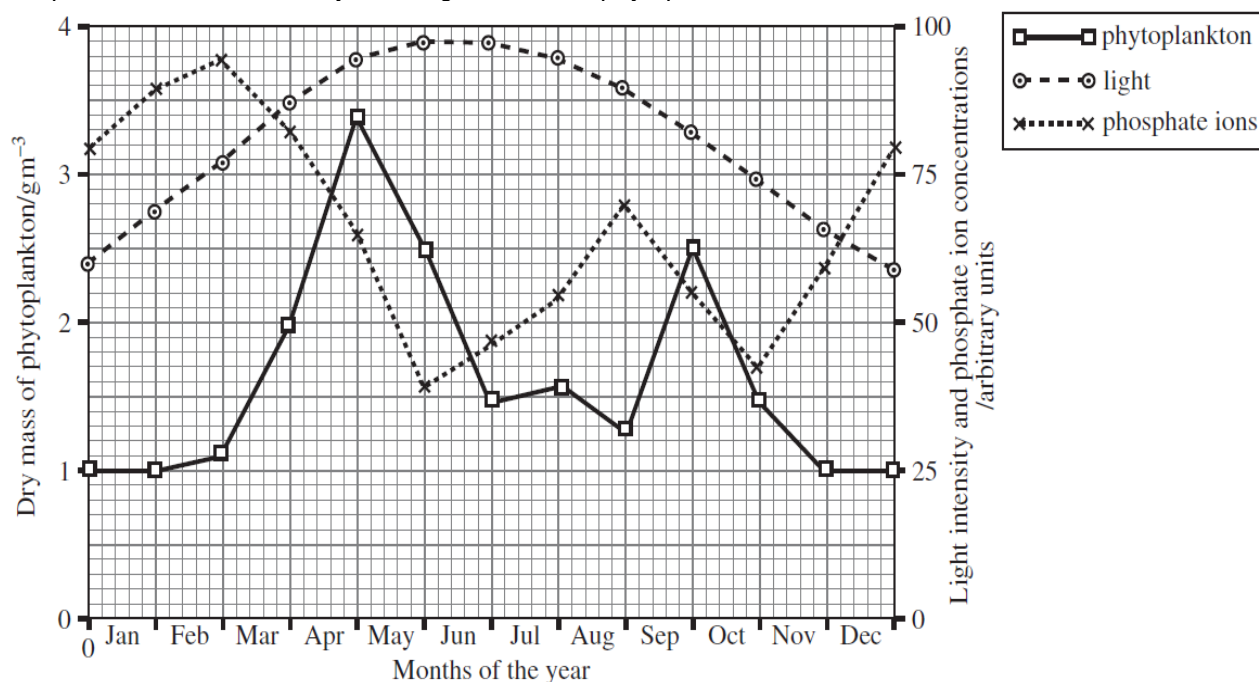
(d) Explain each of the following as applied to receptor cells;

(i) Flicker fusion

(ii) Adaptation

SEROMA CHRISTIAN HIGH SCHOOL

15. The graph shows the abundance of phytoplankton (microscopic plants) throughout one year in the surface waters of a lake. The changing amounts of light and phosphate ions in the water are also shown in the graph. Phosphate ions are necessary for the growth of the phytoplankton.

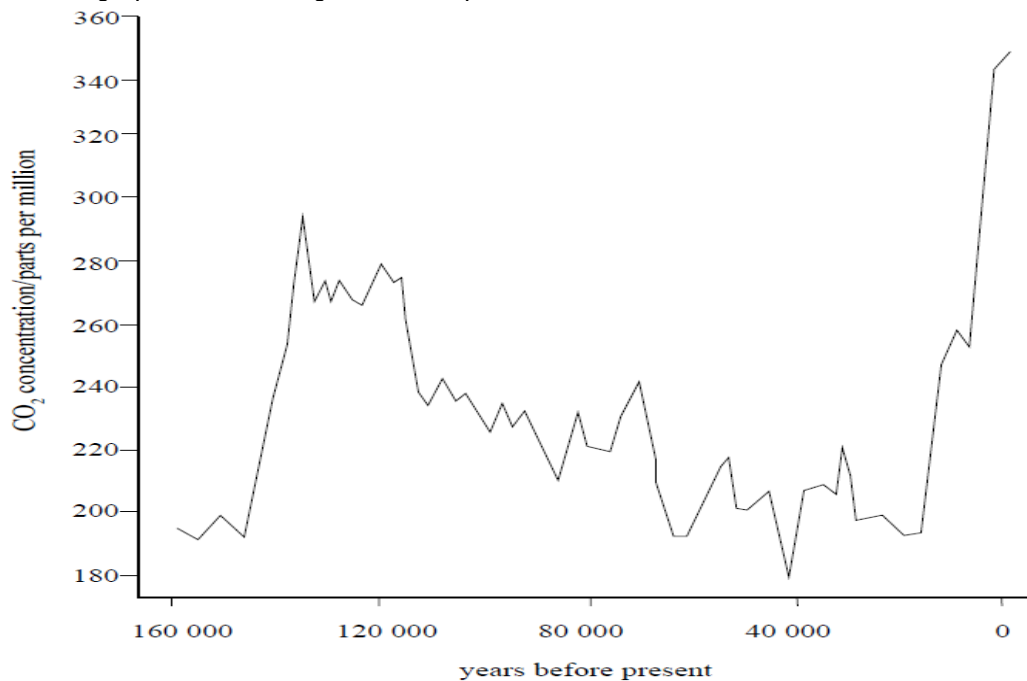


(a) Comment on the relationship between dry mass of phytoplankton with;

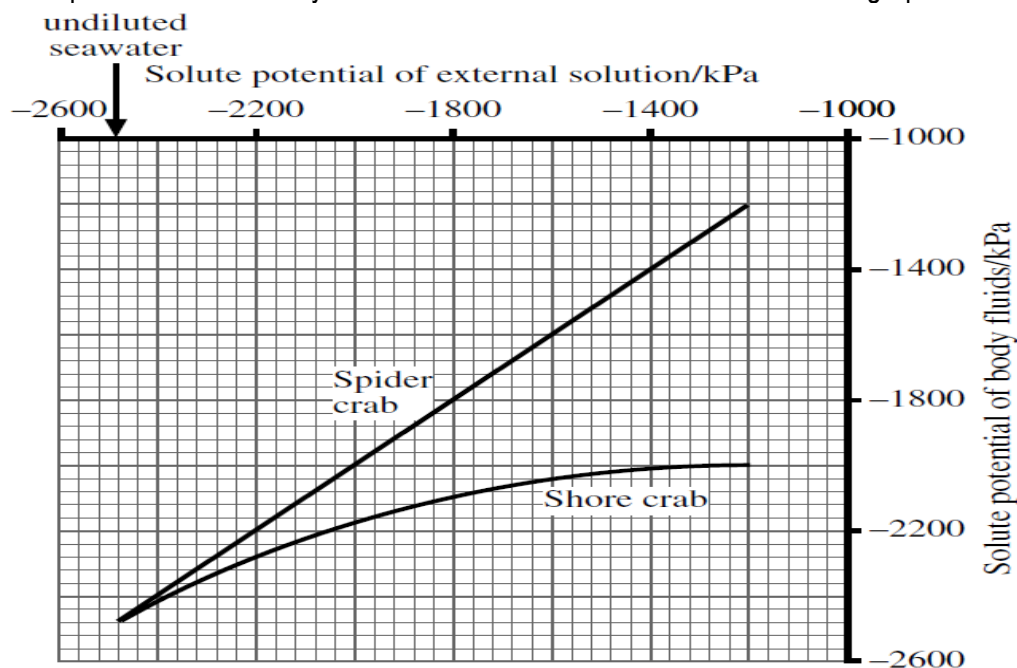
(i) light intensity over the year

(ii) phosphate ion concentration over the year

- (b) Describe and suggest an explanation for the changes in the phytoplankton population during the months of May and September.
- (c) The zooplankton populations peak twice during the year. During which months are these peaks most likely to occur? Explain your choice.
- (d) Discuss how different biotic factors affect distribution of organisms in an ecosystem. **KAKIRA S.S.**
16. The graph shows changes in atmospheric carbon dioxide levels over the last 160,000 years.



- (a) Describe and explain the causes of increasing atmospheric carbon dioxide concentration.
- (b) Outline why global warming may accelerate loss of biodiversity.
- (c) Discuss the indicators of global warming in the world today. **LUGAZI HOMESTONE SCHOOL**
- 17.(a) Explain what is meant by; (i) osmoconformer? (ii) Osmoregulator?
- (b) Describe the role of contractile vacuole in fresh water protists.
- (c) The spider crab (*Maia*) lives in the sea at a depth of over 30 metres, while the shore crab (*Carcinus*) lives in estuaries as well as along the shoreline. When the two species of crab are placed in dilute solutions of seawater the solute potential of their body fluids is altered. The results are shown in the graph below.



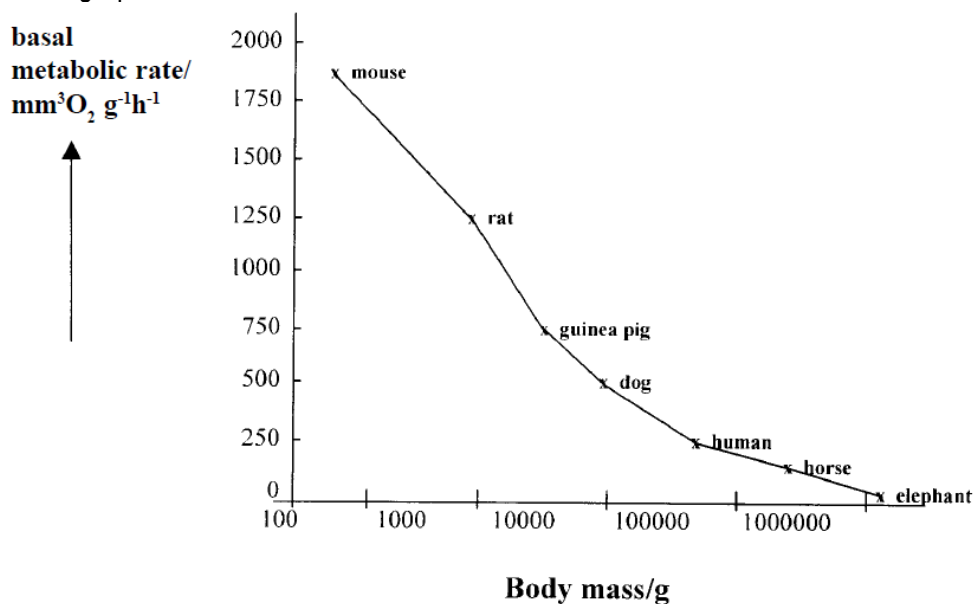
- (i) Explain the effect of diluting seawater on the solute potential of the body fluids of the spider crab.

(ii) When the shore crab is placed in dilute solutions of seawater it absorbs salt through its gills from the surrounding solution. What is the effect of absorbing salt on the solute potential of the body fluids?

(iii) What is the evidence from the graph that the shore crab absorbs salt when placed in dilute solutions of seawater?

LUWEERO S.S.

18. The graph below shows the basal metabolic rate of various mammals.



(a) What is meant by the term 'basal metabolic rate'?

(b) How is the metabolic rate of different mammals measured?

(c) Explain why smaller mammals have higher metabolic rates than large mammals.

(d) How do small animals get enough oxygen to the tissues to maintain a continuous high rate of metabolism?

(e) Discuss the factors that determine basal metabolic rate in organisms. **ST. CYPRIAN H/S KYABAKADDE**

19. When DDT was first manufactured it was used as a method of controlling housefly populations. The populations of two species of houseflies and the spider were monitored over a period of thirteen months. Shortly after the second month of data collection the DDT was applied and it was not toxic to the spider. The results of the study are recorded in table 1 overleaf. Study the table carefully and answer the following questions.

Time (months)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Housefly W (x1000)	35	35	35	20	2	7	17	32	50	65	79	88	82	81
Housefly Y (x1000)	79	82	79	80	62	40	17	0	-	-	-	-	-	-
Spider R (x1000)	72	76	81	78	66	56	49	46	46	48	55	70	85	86

(a) Plot suitable graphs on the same axes to represent the results in the study.

(b) (i) How does the population of the spider relate with the populations of the houseflies in this investigation?

(ii) Explain the relationship in the populations in (b) (i) above.

(c) (i) How do you explain the effect of the use of DDT on the observed trends of the three populations of the animals? (ii) Basing on the information given, what would happen if DDT was toxic to the spider?

(d) (i) Discuss the properties of DDT as an effective pesticide in controlling population of pests.

(ii) Explain the following: Biomagnification; Bioaccumulation; and Bioremediation.

NAALYA S.S. BWEYOGGERERE

20. (a) Describe mechanisms which promote genetic variability in plants

(b) Discuss the shortcomings of inbreeding in a population.

EASTERN COLLEGE BUSIA

21.(a) Distinguish between the fluid mosaic and Danielli-Davson models of the plasma membrane.

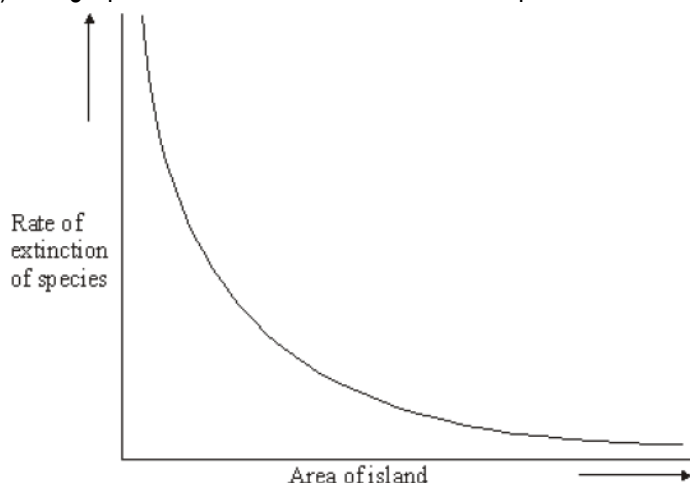
b) Explain how the;

i) golgi bodies function in cells.

ii) Plasma membrane allows transport of materials across it.

UGANDA MARTYRS KAYUNGA

22. (a) Define the term; (i) Biodiversity (ii) biological conservation
 (b) Give the aims of biological conservation.
 (c) The graph shows the rate of extinction of species of birds on islands of different size.



- (i) Describe the relationship between the rate of extinction of species and the area of the island.
 (ii) Suggest the cause of this relationship.
 (d) Describe how other factors may affect the rate of extinction of species on an island. **NSAMBYA S.S.**
 23. Figures 1 (a) and 1 (b) show the physiological changes that occur in a fruit as it ripens.

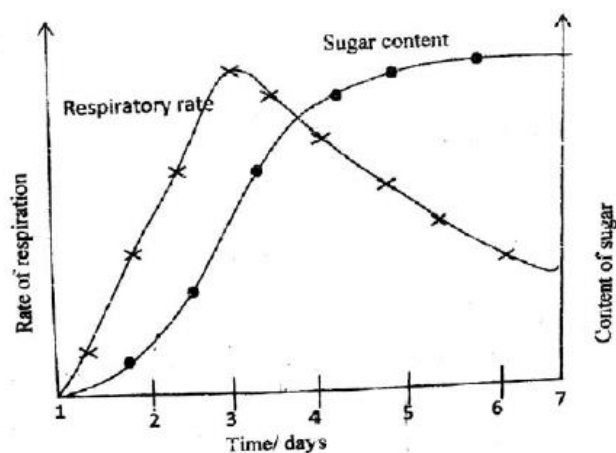
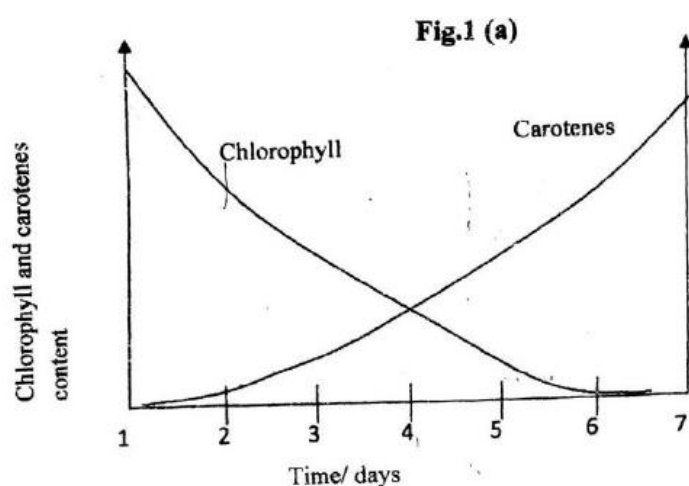


Fig. 1(b)

- (a) Describe how each of the following variables change with time:
 (i) Respiratory rate (ii) Sugar content
 (b) Explain the variation in each of the following; (i) Respiratory rate (ii) Sugar content
 (c) Explain the relationship between the content of chlorophyll and carotenes.
 (d) What is the ecological significance of each of the changes depicted on the figures?
 (e) Outline other changes which occur in a fruit as it ripens. In each case, give the importance of the change.

STANDARD HIGH ZANA

24. (a) Explain the changes which occur to the bitten part of the human body by the wasp.
 (b) Describe how the B lymphocyte defend the body against infections.

ST. AUGUSTINE'S COLLEGE WAKISO

- 25.(a) What is meant by phytochromes?
 (b) Describe the control of flowering in tobacco by the phytochromes.
 (c) Describe geotropism in plants.

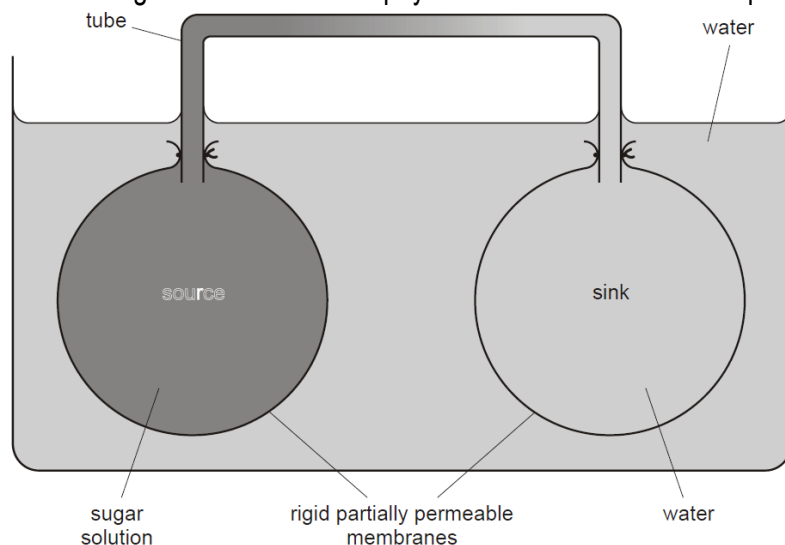
MIDLAND HIGH SCHOOL

26.a) Compare the structure and functioning of the cardiac and skeletal muscles.

b) Explain how structural features of birds are related to flight.

EAST HIGH NTINDA

27. The diagram below shows a physical model to illustrate the principle of mass flow in plants.



(a) What is meant by mass flow?

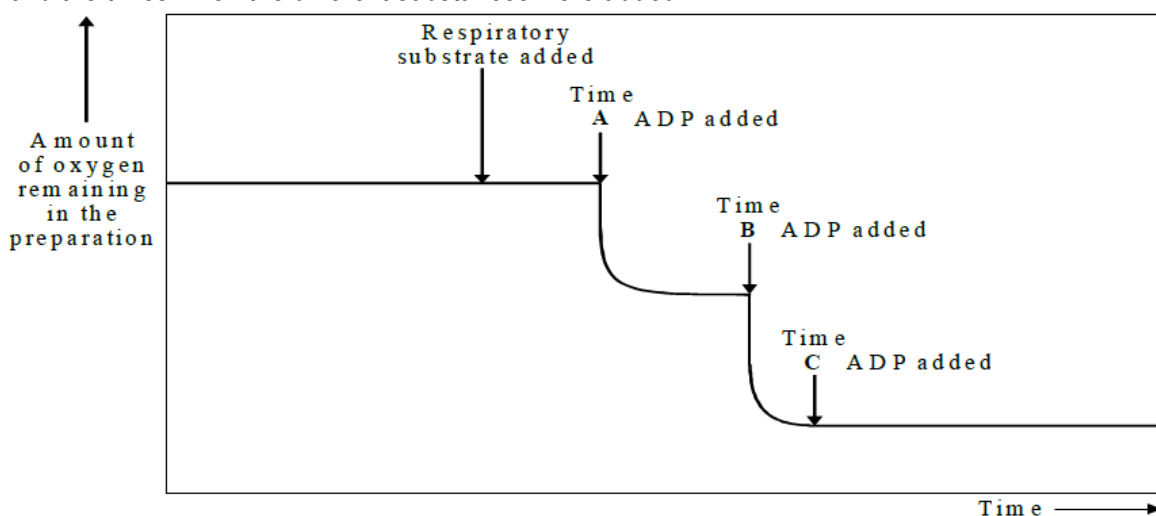
(b) (i) Give examples in plants of a source and a sink.

(ii) Use the information in the diagram to explain how mass flow of materials between the source and the sink would be brought about.

(c) State two pieces of evidence to show that sugar transport from sources to sinks in plants does not only involve passive movement by mass flow.

MACKAY MEMORIAL

28. A preparation of mitochondria was made from liver tissue. Substances were added to this preparation and the amount of oxygen in the preparation was monitored over a period of time. The diagram shows the trace obtained and the times when the different substances were added.



(a) Suggest why respiratory substrate added to this preparation was a molecule from Krebs cycle and not glucose.

(b) What additional substance, other than those mentioned on the diagram, would need to be added to this preparation in order to get the results shown?

(c) Explain: (i) why the amount of oxygen fell between lines A and B;

(ii) the shape of the trace after time C.

KIRA COLLEGE BUTIKI

29. (a) Describe the post-natal circulatory changes in the human newborn baby.

(b) What is the significance of the changes mentioned above?

(c) How is the mammalian placenta adapted for the transportation role?

(d) Describe the role of the placenta in maintaining pregnancy.

BUDDO S.S.

30. (a) Describe how food ingestion stimulates larval development into an adult grasshopper.

b) Explain the significance of giant axon neuro-secretion in man. **ST. THOMAS AQUINAS JINJA KAROLI**

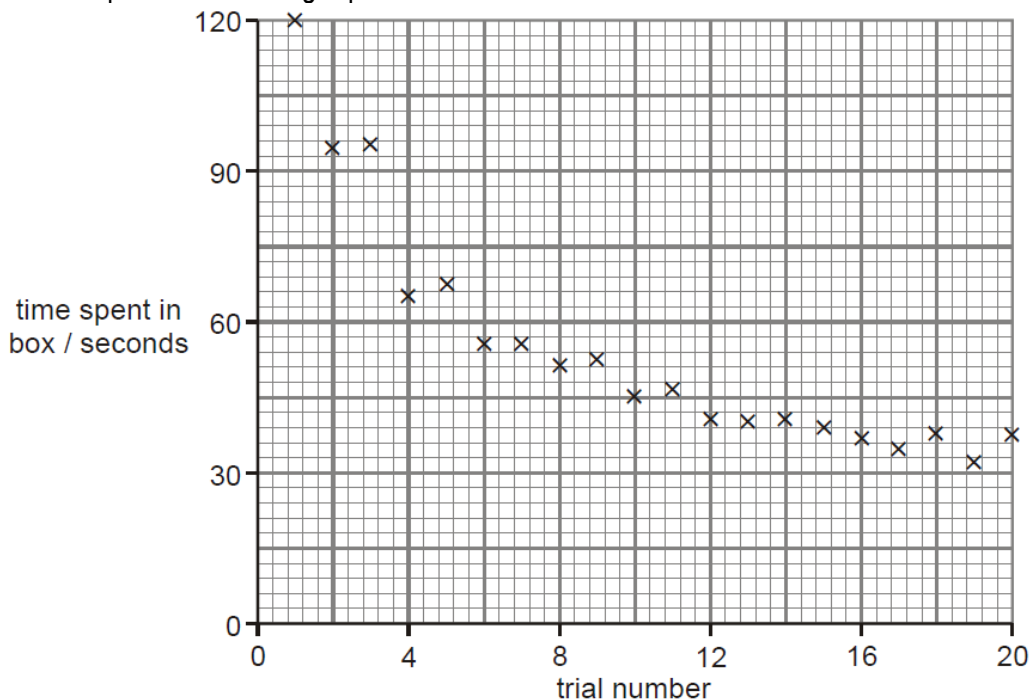
31.(a) Describe the process of secondary growth in a dicotyledonous stem.

(b) What are the functions of the following in a stem? (i) rays (ii) cork

JINJA S.S.

32. (a) Define operant conditioning.

(b) During an experimental trial, a cat was placed inside the puzzle box. If the cat pulled the loop with its mouth or a paw, the door opened and it could escape. The time taken for the cat to escape was recorded. The experiment was then repeated several times with the same cat. The figure shows a graph of the time taken for the cat to escape from the puzzle box during repeated trials.



(i) Account for the changes in time spent by cat in box at different trial numbers.

(ii) What evidence shown by the figure shows that learning took place?

(iii) State three factors that could affect the learning of a new situation like a puzzle box in animals.

(iv) How could the time needed by the cat to escape out of the puzzle box be reduced?

(c) Discuss the characteristics of reflexes.

TURKISH LIGHT ACADEMY

33. The figure shows the changes in leaf area index (ratio of leaf surface to soil surface ($\text{m}^2 \text{cm}^{-2}$)) of two species of clover, *Trifolium repens* and *Trifolium fragiferum*, growing in a pure and mixed stand.

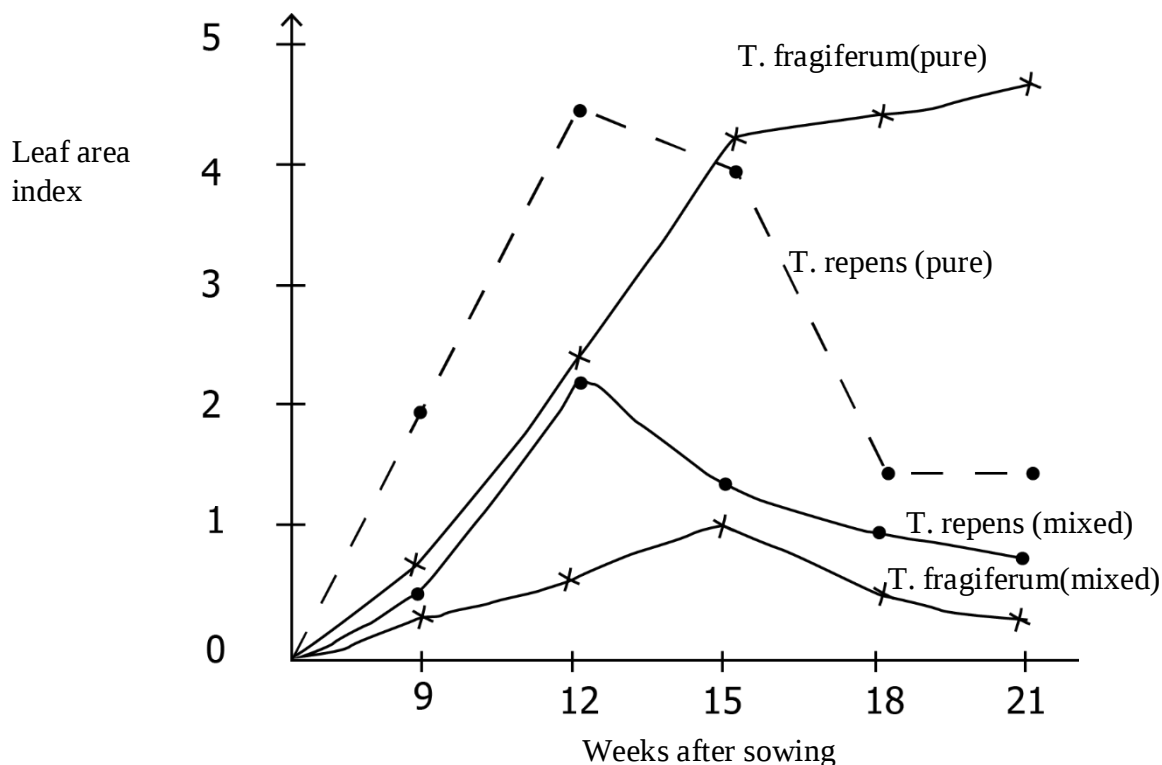


Table 1 shows the characteristics of the petioles and leaf size of the two species of clover.

	Characteristic	
	<i>T.fragiferum</i>	<i>T.repens</i>
Petiole length	Long	Short
Leaf size	Large	Small

Use the information in the figure and table to answer the questions that follow.

- (a) Compare the leaf area index of *Trifolium repens* and *T.fragiferum* in the;
 (i) pure stands (ii) mixed stands
 (b) Explain the trend in leaf area index for *Trifolium repens* in pure stands.
 (c) Explain the difference in growth rate of the two species in mixed stands.
 (d) Explain why *Trifolium fragiferum* continues to grow after the peak of *Trifolium repens*?
 (e) What conclusion can you draw from the results in a mixed stand.
 (f) What other factors are likely to have caused the difference in growth rate of the two species in mixed stand?

CRESTED S.S. MAKINDYE

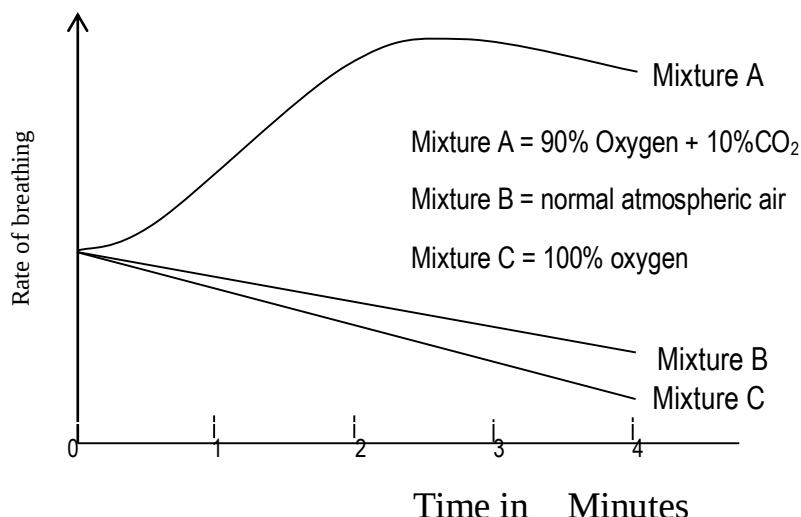
34. (a) Describe the structure of a lenticel.

(b) how are the conditions for efficient gaseous exchange fulfilled in terrestrial plants?

(c) explain the absence of transport pigments in plants.

ST. MICHAEL HIGH SCHOOL SSONDE

35. In an experiment, a subject was given various mixtures to breath and the rate of breathing was measured. The results are shown in graph 1



Five small discs cut from spinach leaves were floated in a small volume of buffered hydrogen carbonate solution in a flask attached to a respirometer. The discs were first exposed to bright light, then to dim light and finally left in the dark. Oxygen release was recorded as positive values and oxygen up take as negative values.

The results obtained from the experiment are given below in table 1.

Light intensity	Time interval in minutes	Oxygen uptake or release for each 3 minutes interval (mm ³)
Bright light	0-3	+57
	3-6	+64
	6-9	+58
	9-12	+60
Dim Light	12-15	+16
	15-18	+3
Dark	18-21	-16
	21-24	-12
	24-27	-15
	27-30	-14

Use the information to answer the questions that follow.

- (a)(i) Present the data in table 1 in suitable graphical form
 (ii) Calculate the mean rate of oxygen release in bright light
 (iii) Explain the significance of the results obtained from this experiment
 b) Explain what the data in graph 1 show concerning how the rate of breathing is controlled.

c) In the light of the information provided by graph 1. Show why mouth to mouth resuscitation is a better means of artificial respiration than pressing on the chest wall.

d) Why is it more dangerous to rebreath expired air if it is passed through soda lime?

LOYAL COLLEGE NAMUGONGO

36. (a) Compare carbohydrates and lipids.

(b) Explain why a hibernating animal first converts carbohydrates to lipids before hibernation.

(c) Describe the role played by lipids in life.

ENTEBBE S.S.

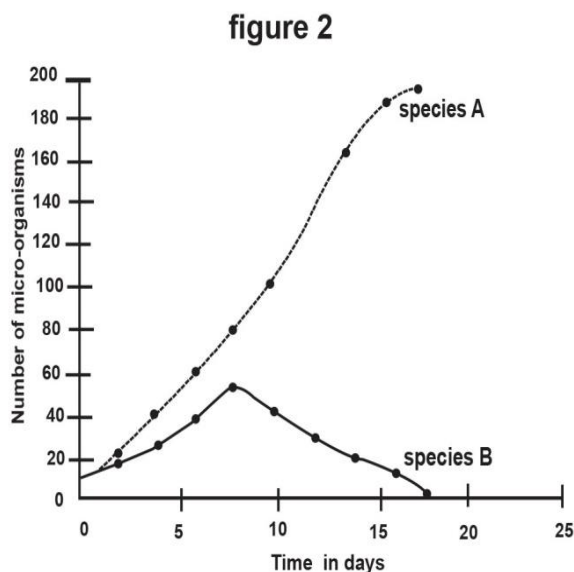
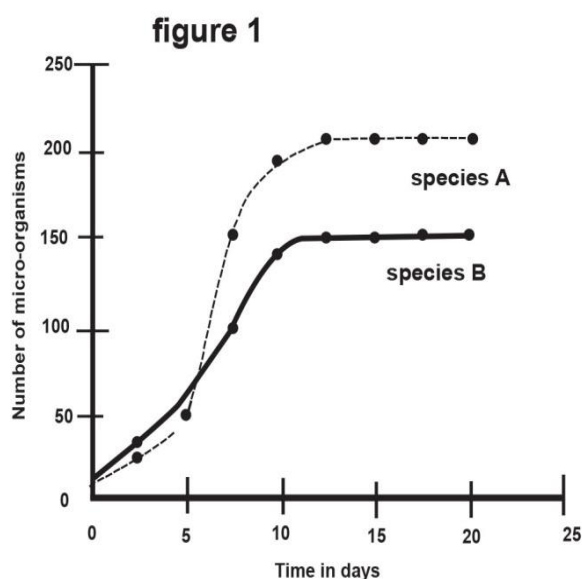
37. (a) Explain the significance of co-existence of plants and animals towards them.

b) How do the terrestrial plants survive their excretory challenges?

LUZIRA S.S.

38. The graphs below indicate the population growth of two related aquatic microorganisms of species A and B in two sets of culture media. In figure 1 of the first set, both species were cultured in a long and cylindrical vessel while in figure 2 of the second set both species were cultured in a shallow Petri dish.

Study the two graphs and answer the questions that follow.



(a) Describe the population changes with time of:

(i) A (ii) B in long and cylindrical vessels

(b) Compare the population changes of both species in figure 1

(c) State the interaction of the two species in the first set

(d) Explain the interaction stated in (c), above

(e) Explain the population changes of both species up to 7½ days in figure 2

(f) Explain the population changes of both species from 7½ days in figure 2

(g) State and explain the competitive exclusion principle.

JINJA COLLEGE SCHOOL

39. a) Describe the hormonal control of post – fertilization changes in human female up to breast feeding.

(b) How is the viability of the sperms in humans maintained?

ST. LUCIA NAMAGOMA

40. (a) Describe the chemiosmotic synthesis of energy within the chloroplasts.

(b) Compare the chemiosmotic synthesis of energy described above with that in mitochondria.

GREENHILL ACADEMY

41. (a) Describe how abnormal haemoglobin arises in a human population.

(b) Explain the effect of the gene for abnormal haemoglobin in humans.

(c) Differentiate between sex-linked and sex limited genes.

BUGEMA ADVENTIST

42.(a) Account for the advantages of panting to sweating.

(b) Explain why panting can result into the following conditions.

(i) Excessive alkalinity of blood.

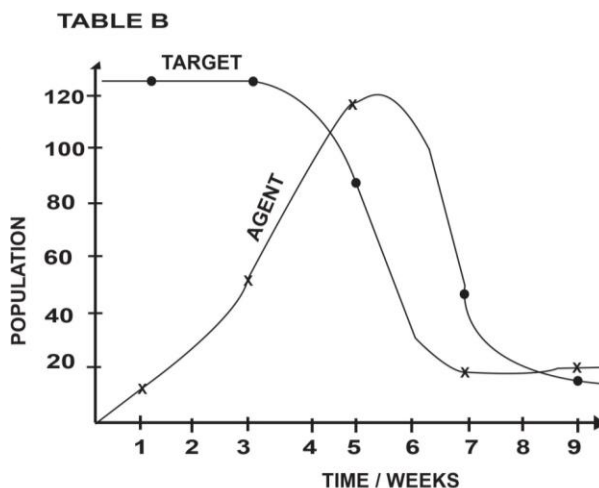
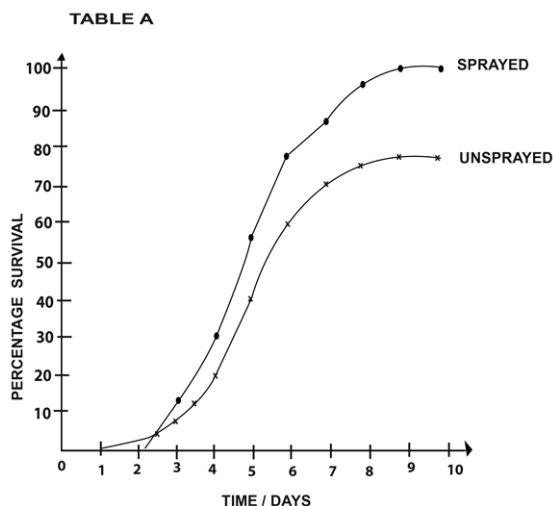
(ii) Increased heat production.

(c) (i) Describe metabolic ways endothermic animals use in hot conditions to control body temperature.

(ii) Give an account of osmoregulation in estuarine fish.

NDEJJE S.S.

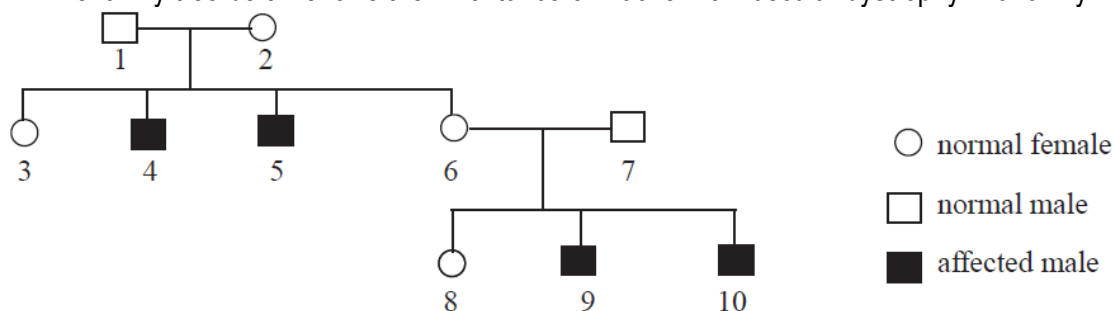
43. In an experiment to study the effectiveness of DDT towards the cabbage pest, *Pieris rapae* which feeds on cabbage leaves, two adjacent farm yards were prepared and *Pieris* was introduced in each farm and left for some time. After spraying one farm yard with DDT for three consecutive times, the number of eggs that survived and hatched into larvae at the sprayed and non sprayed farm yards was determined as shown by Graph A. In another set of experiment, *Pieris rapae* was exposed to birds as its control agents and the changes in the population of both, with time was determined as indicated by Graph B. Study the graphs and answer the questions that follow



- (i) Account for the increase in the population of the control agent.
- (b) Explain the decrease in the population of the control agent.
- (i) Account for the decrease in the population of *Pieris rapae*.
- (ii) Account for the population of *Pieris* and that of the control agent from 8½ to the 9th week.
- (d) Compare the number of eggs of *Pieris* between the sprayed and non sprayed farm yards.
- (e) Account for the differences in the number of eggs of *Pieris* at the sprayed and non-sprayed farm yards.
- (f) Explain one property of DDT other than the one shown above, which render it unsuitable for environmental use.
- (g) Outline any three advantages of the method used in Graph B to that used in Graph A.

GOOD SAMARITAN S.S.

44. The family tree below shows the inheritance of Duchenne muscular dystrophy in a family.



- (a) What conclusion can you draw about the genetic control of the disease? Give a reason for your answer.
- (b) What would a genetic counsellor say to parents 6 and 7 when explaining what the probability would be of their next child suffering from Duchenne muscular dystrophy?
- (c) State two other genetic diseases in humans transmitted in the same way.
- (d) Outline the importance of pedigree diagrams /family tree in genetics.

KASAWO S.S.

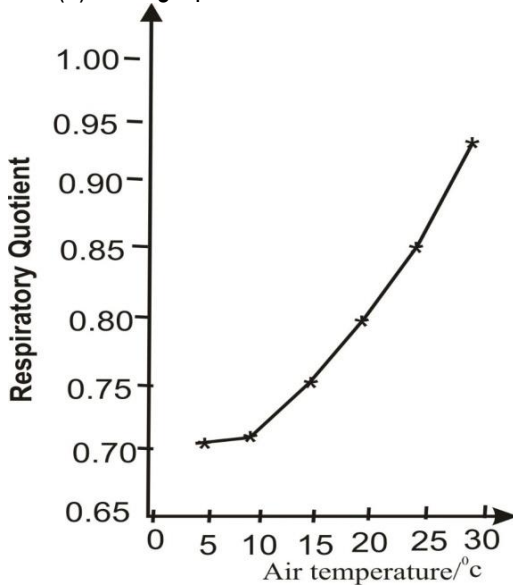
45. (a) Explain the glowing eyes of the cat at night, when shone with light.
- (b) Account for the sensitivity of rods towards light.
- (c) Describe the physiological behavior of a rod in darkness.

ST.PETER'S S.S. NAALYA

46. Carbohydrates and lipids are useful energy sources in cells

- (a) (i) Explain the difference in the energy values of carbohydrates and lipids as energy sources
(ii) Explain why a hibernating animal first converts carbohydrates to lipids before hibernation

(b) The graph below shows the RQ values of a mouse at different air temperatures



(i) Using the information in the graph, explain the relationship between RQ and air temperature.

(ii) Explain circumstances under which RQ would rise over 1.01.

NAMIREMBE HILLSIDE

47. The table below shows the excretion of urea in the urine of a healthy student on high and low protein diets.

Diet	Protein intake/g per day	Daily output of urea/g
High protein	189	21.4
Low protein	56	8.5

(a) Calculate the percentage difference in the daily output of urea between the two diets in relation to the total daily urea output.

(b) (i) Explain the difference in the output of urea between the two diets.

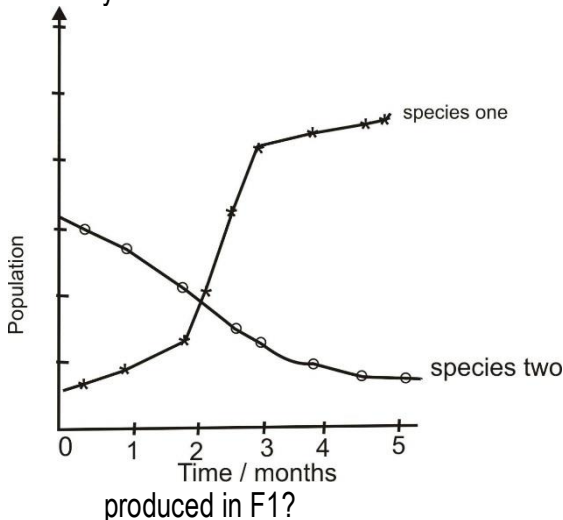
(ii) What is the significance of: glycogenesis, glycogenolysis and gluconeogenesis.

(c) (i) Suggest reasons why many aquatic organisms excrete ammonia rather than urea as the end product of protein metabolism.

(ii) Sate other ways other than ability to osmoregulate that freshwater animals utilize to prevent over dilution of their tissues.

GAYAZA HIGH SCHOOL

48. Parasitic wasps can be used for biological control of white flies. Wasps were released into a glass house at the same time to find out which one was more effective. Graph shows how the population of both species varied during the study.



(a) (i) What is meant by biological pest control?

(ii) Explain the changes in the population size of species one.

(b) (i) Account for the advantages and disadvantages of using biological control rather than pesticides in the control of pests.

(ii) Give an account of the phenomenon of greenhouse effect

KIBULI SEC SCH

49. In cats short hair is dominant over long hair, the gene involved is autosomal. Another gene which is sex linked produces hair color, its alleles produces black or white coat color and the heterozygote combination produces tortoise shell color.

(a) If a long haired black male is mated with a tortoise shelled female homozygous for short hair, what kind of offsprings will be produced in F1?

(b) (i) If the F1 cats are allowed to interbreed freely among themselves, what are the chances of obtaining long haired males.

(ii) Apart from being sex linked what else can you say about the inheritance of the gene for coat color?

(iii) Describe how sex is determined in Drosophila, reptiles and birds.

KINGS COLLEGE BUDDO

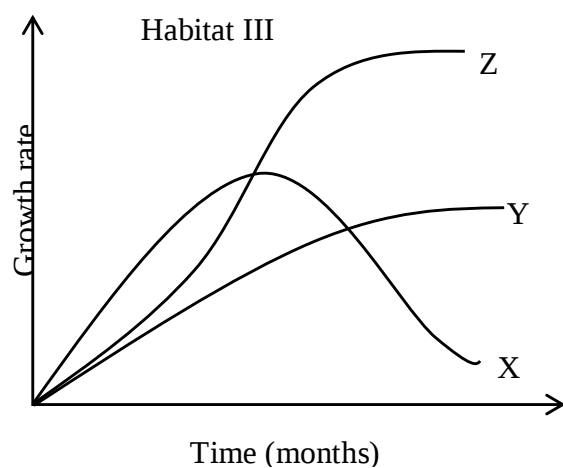
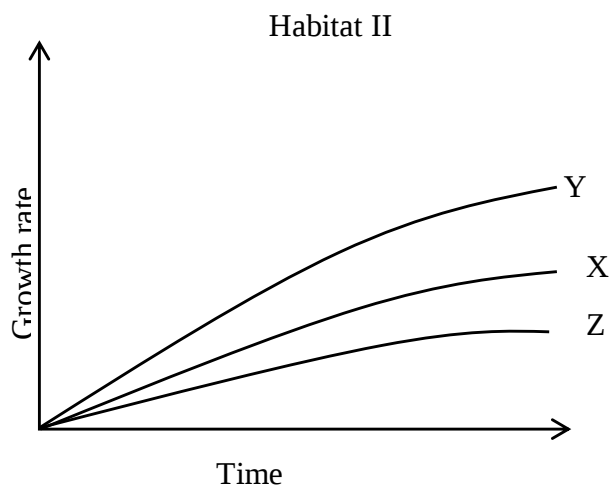
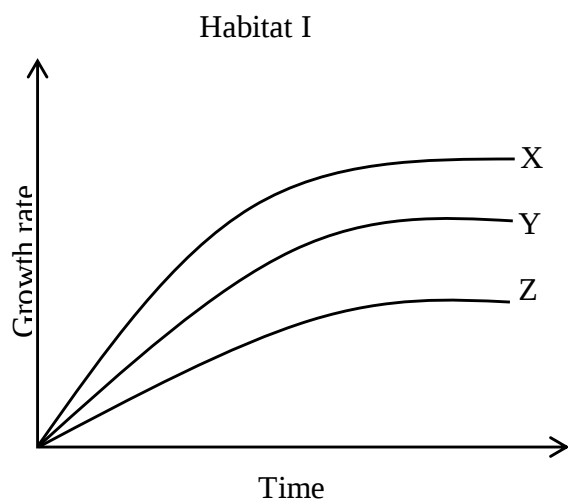
50. Three different varieties of maize X, Y and Z were grown in three separate habitats with different soil conditions. The characteristic features of the soils in each habitat are summarised below. Use it to answer the questions that follow.

Habitat I: 95% nitrogen, 85% organic matter, more micro-organisms.

Habitat II: 20% nitrogen, 24% organic matter, few micro-organisms.

Habitat III: 95% nitrogen, 85% organic matter, more weeds, more micro-organisms.

Results of the study for each habitat are shown in figures below



- (a) Compare the growth rate for the three varieties in;
- (i) Habitat I
 - (ii) Habitat II
- (b) Giving reasons, describe the habitat preferences for each variety of maize.
- (c) Explain;
- (i) the differences in growth rate of variety X in habitat I and II.
 - (ii) how the significance of the growth rate of the varieties in habitat III to a farmer?
- (d)
- (i) What are the possible sources of nitrogen to plants.
 - (ii) Outline the importance of organic matter in the soil.
- ST MARY'S COLLEGE KISUBI**

HEARTFELT SUCCESS