SEROMA CHRISTIAN HIGH SCHOOL

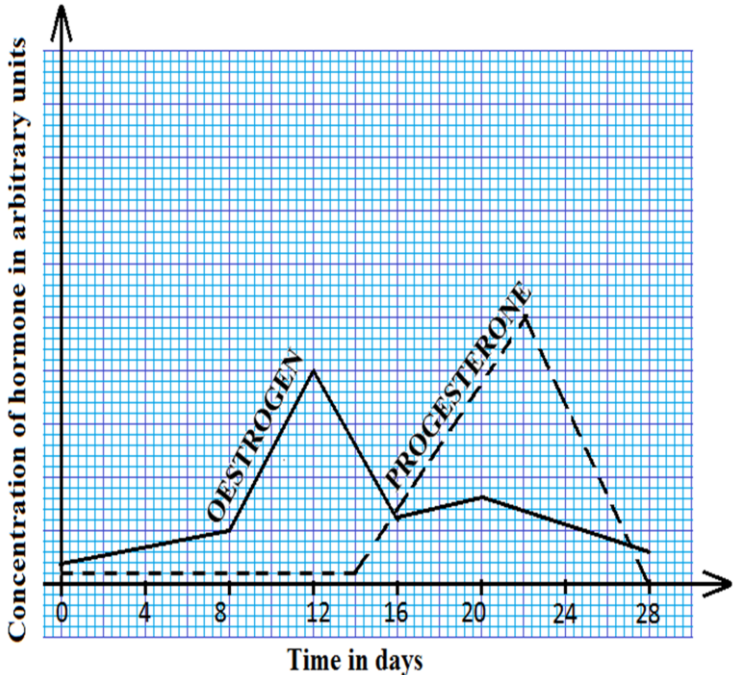
'O' LEVEL BIOLOGY SEMINAR

SATURDAY 22nd JUNE, 2019

SECTION B: STRUCTURED QUESTIONS

SECTION B PART 1: DATA ANAYLYSIS QUESTIONS

1. The graph below shows the changes in the concentration of ovarian hormones in an adult human female over a period of 28 days immediately after the previous menstrual cycle.



(a) Describe the change in the concentration of oestrogen. ***(5 marks)***

(b) Give the differences in the changes in the concentrations of oestrogen and progesterone. ***(5 marks)***

(c) Explain the increase in oestrogen concentration in the first 12 days. ***(4 marks)***

(d) What are the effects of the following hormones during the menstrual cycle?

(i) Oestrogen. ***(3 marks)***

(ii) Progesterone. ***(3 marks)***

Seroma Christian high School

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2. The table shows the changes in the diameter of the pupil of the eye in different light intensities.

Light intensity in a.u	0	5	10	15	20	25
Diameter of pupil in mm	8.5	8.0	7.1	6.3	5.4	4.5

(a) Plot a graph to represent the information in the table. ***(7 marks)***

(b) Describe the effect of increasing light intensity on the diameter of the pupil. ***(2 marks)***

(c) Explain how increasing light intensity affects the diameter of the pupil. ***(5 marks)***

(d) The changes in the diameter of the pupil are because of a nervous response/ State

(i) the type of nervous response to which the pupil responds. ***(1 mark)***

(ii) two features of the nervous response to which the pupil responds. ***(2 marks)***

(iii) three benefits of the organism of eyes responding to light. ***(3 marks)***

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3. The Table below shows the environment temperature and body temperature of animal A and B. Both animals were exposed to the same environmental temperature for a period of 12 hours.

	Temperature (°C)		
Time in hours	**Environment**	**Mammal A**	**Mammal B**
7:00am	10	37	12
8:00am	14	37	16
9:00am	20	37	22
10:00am	24	37	26
11:00am	30	37	28
12:00pm	36	37	36
1:00am	32	37	34
2:00pm	28	37	26
3:00pm	22	37	20
4:00pm	21	37	20
5:00pm	21	37	20
6:00pm	21	37	20

(a) Plot a graph of temperature with time ***(8 marks)***
(b) Describe how the body temperature of the mammals varies with environmental temperature. ***(6 marks)***
(c) Describe how animal A maintains a constant body temperature. ***(4mark)***
(d) What advantages does animal A has over animal B? ***(2 marks)***

Nabisunsa Girls School

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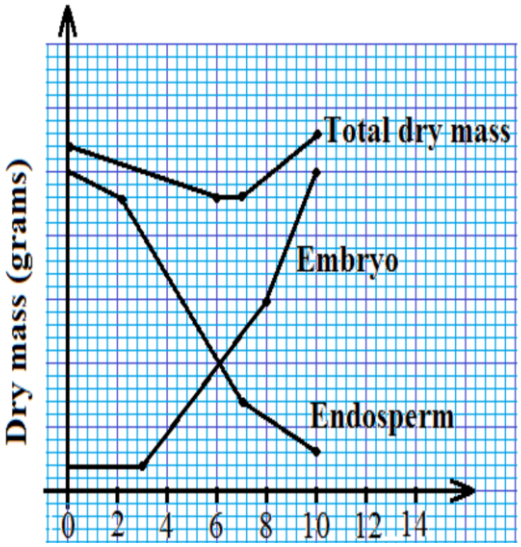
4. The graph below shows the relative changes in dry mass of the endosperm and embryo during germination of maize in a well illuminated environment.



(a) Compare the dry mas of the endosperm and embryo. ***(02 marks)***
(b) Explain the changes in each of the following during germination of maize
(i) Dry mass of endosperm ***(06 marks)***
(ii) Dry mass of embryo ***(06 marks)***
(iii) Total dry mass. ***(06 marks)***

Mt. St. Marys' Namagunga

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5. The table below shows the rate of blood flow in various organs at rest and during strenuous exercise.

Organs of the body	Rate of blood flow (dm^3/min)	
	At rest	During strenuous exercise
Heart muscle	0.2	0.9
Skeletal muscle	1.4	15.0
Skin	0.5	0.7
Gut	1.3	0.5
Kidney	1.1	0.4
Brain	0.7	0.7

(a) Calculate the percentage change in blood flow through the gut and skeletal muscle when the animal is subjected to strenuous exercise following rest. ***(3marks)***
   (i) Percentage change for gut.
   (ii) Percentage change for skeletal muscle

(b) Why does more blood flow to the following organs during strenuous exercise than at rest?

(i) Heart muscle. ***(3marks)***

(ii) Skeletal muscle. ***(3marks)***

(iii) Skin. ***(3marks)***

(c) Through what mechanism does blood flow to skeletal muscles increase during strenuous exercise? ***(4marks)***

(d) Why does blood flow to the following organs during strenuous exercise than at rest.
   (i) Gut. ***(2 marks)***
   (ii) Kidney. ***(2 marks)***

(e) Why is the blood flow to the brain the same at rest and during strenuous exercise? ***(1 marks)***

Namilyango College

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6. An experiment was carried out to investigate heat production and heat loss in man at different environmental temperatures. Heat production and heat loss were determined as air temperature changed. The results were as shown in the table below:

Air temperature (°C)	0	5	10	15	20	25	30	35	40
Heat produced (J/hr)	1420	1080	800	600	480	380	320	290	280
Heat loss (J/hr)				140	200	280	400	560	860

(a) Using the same axes, plot a graph to represent the results in the table above**.** ***(7 marks)***

(b) At what air temperature does the body lose as much heat as it produces? ***(1 mark)***

(c) (i) Explain the relationship between heat loss and heat production at 40 °C. ***(3 marks)***

(ii) Explain why the readings for this experiment were not taken for air temperatures above 40°C**.** ***(2 marks)***

(a) (i) Explain how sweating causes the body to lose excess heat. ***(2 marks)***

(ii) State three ways in which mammals are adapted to live in regions with sub-0°C. ***(3 marks)***

(b) Summarise the roles of hypothalamus in temperature regulation. ***(2 marks)***

Kawanda secondary School

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7. The pressure of the flow of blood in a mammal was determined in two different vessels **A** and **B**. The data was taken within a period of 60 seconds and was presented as shown in the table below.

Time in seconds	Blood vessel A	Blood vessel B
0	160	320
10	164	360
20	165	320
30	178	400
40	172	360
50	160	320
60	160	360

(a) Plot a graph of blood pressure in both vessels against time on the same axes. ***(8marks)***
(b) Describe the variation in blood pressure in blood vessel A. ***(4marks)***
(c) From the graph, suggest the possible identity for;
  (i) Blood vessel **A** ***(1mark)***
  (ii) Blood vessel **B** ***(1mark)***
  (iii) Give a reason for each of your suggested answers in (i) and (ii) above. (02marks
(d) Explain any factor that would result in an increase in blood pressure in both blood vessels above. ***(2marks)***
(e) State two structural differences between blood vessel **A** and **B**. ***(2marks)***

Namilyango Secondary School

8. The results below show the effect of some conditions on seed germination. In each experiment, all other environmental conditions are kept constant except the one being investigated.

Experiment	Treatment	Percentage of germination
1	Seeds placed in highly closed container with pyrogallic acid.	0
2	Seeds kept in petri dish in light.	96
3	Seeds kept in petri dish in darkness.	97
4	Seeds kept in a fridge at 4^{o}C.	0.5
5	Seeds kept in oven at 60^{o}C.	0
6	Seeds kept at 35^{o}C.	92
7	Dry seeds in a closed container.	0
8	Moist seeds in a closed container.	87

(a) Explain 0% germination in experiment 1,5 and 7. ***(6 marks)***
(b) Why are the results of experiment 2 and 3 not significantly different? ***(2 marks)***
(c) Explain the difference in results of experiments 4 and 6. ***(4 marks)***
(d) From the experiment, what are the conditions necessary for germination? Explain the importance of each condition. ***(06 marks)***
(e) What is the importance of tilling land before planting seeds? ***(2 marks)***

Lubiri High School

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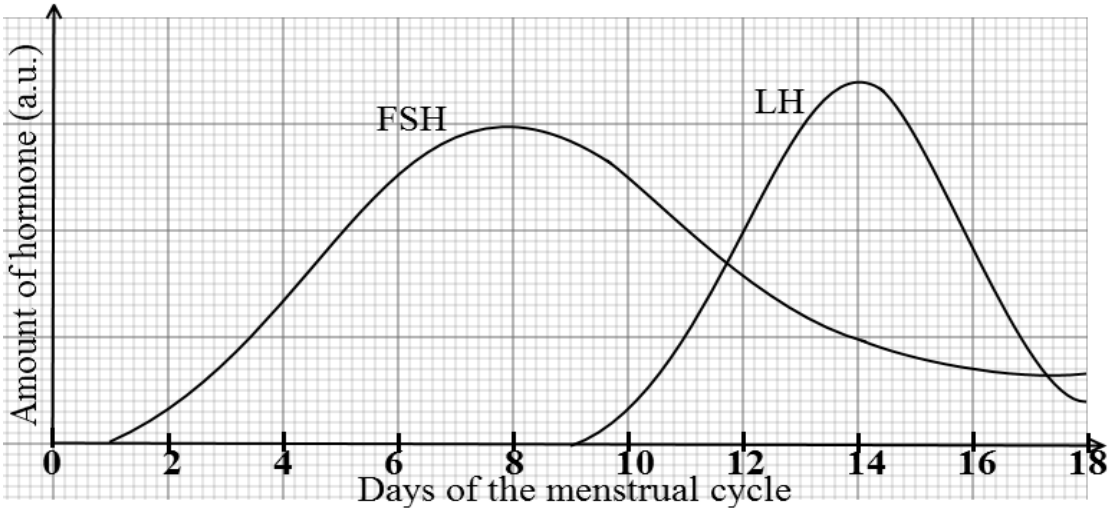
9. The graph below shows the relative amounts of follicle stimulating hormone (FSH) and luteinising hormone (LH) in the blood stream of a woman during the first 18 days of the menstrual cycle.



(a) Describe how the amounts of the two hormones change during the period shown. **(*5 marks*)**

(b) State the organ which

(ii) secretes the two hormones. **(*1 mark*)**

(iii) is affected by the two hormones. **(*01 mark*)**

(c) Describe the effects of the two hormones on their target organ. **(*4 marks*)**

(d) Why is it important for human menstrual periods to stop during pregnancy? **(*03 marks*)**

(e) (i) Explain how women can use the knowledge of menstrual cycle to avoid conception. **(*04 marks*)**

(ii) Comment on the reliability of natural methods of family planning. **(*02 marks*)**

Seeta High School

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10. The table below shows the results of an experiment in which the thoracic volume for an individual at rest was measured with time of ventilation/breathing. Study it carefully and answer the questions that follow.

Thoracic volume in cm^3	20	40	60	70	50	35	20
Time in seconds	0	12	24	30	40	50	60

(a) (i) Represent these results graphically ***(8 marks)***

(ii) Describe the change in thoracic volume with time. ***(2 marks)***

(a) Identify the phase in ventilation that led to the change in thoracic volume from

(i) 0 to 30 seconds**.** ***(1 mark)***

(ii) 30 to 60 seconds ***(1 mark)***

(b) What mechanisms led to the change in thoracic volume from

(i) 0 to 30 seconds. ***(4 mark)***

(ii) 30 to 60 seconds ***(4 mark)***

Gayaza High School

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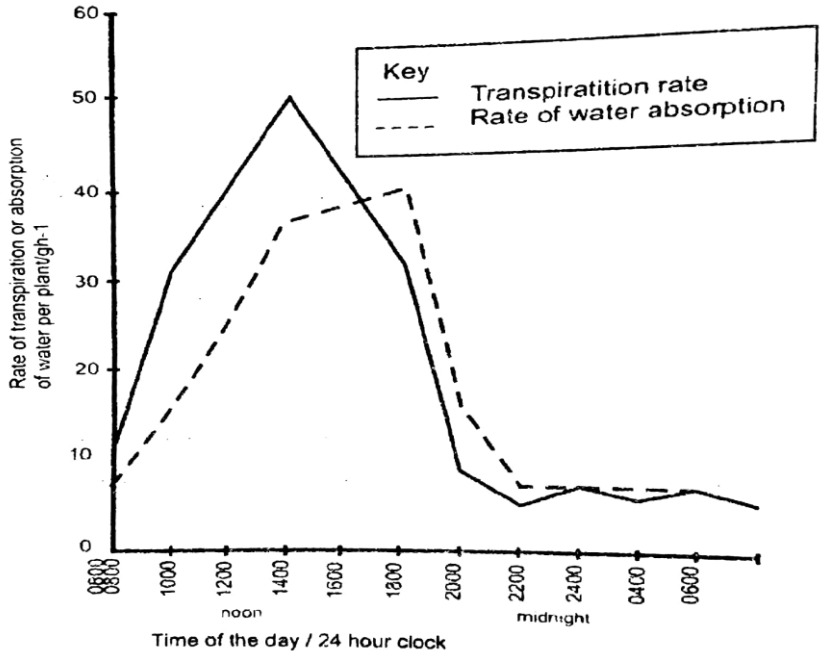
11. An investigation was carried out into the relationship between the rate of water absorption and the rate of transpiration in sunflower plants at various times of the day. The results are shown in the diagram below.



(a) Describe the change in the rate of water absorption from 08.00hours to 20.00hours. ***(3marks)***

(a) What are the differences in the changes in the rate of water absorption and the rate of transpiration from 08.00 hours to 20.00 hours? ***(3marks)***

(b) Account for the changes in the rate of transpiration that took place.

(i) From 08.00 hours to 14.00 hours. ***(4marks)***

(ii) From 14.00 hours to 20.00 hours. ***(4marks)***

(iii) From 20.00 hours to 06.00 hours. ***(3marks)***

(c) Explain the relationship between the changes in the rate of water absorption and the rate of transpiration. ***(3marks)***

Taibah international School

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12. The table below shows the number of students per blood group in S4 class.

Blood group	Number of students
A	98
B	95
AB	120
O	70

Represent the information on a suitable graph.
From your knowledge of genetics explain why expected number for blood group O is lower.
How does inheritance of blood groups differ from height?

Ndejje Secondary School

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13. The composition of blood passing through the uterine vessels during pregnancy was analysed and the results presented in the table as shown below.

% composition				
Substrate analysed	Uterine artery	Umbilical artery	Uterine vein	Umbilical vein
Oxygen	90	10	10	70
Carbon dioxide	8	75	80	12
Glucose	90	2	2	80
Urea	20	60	80	12
Amino acids	75	15	20	75

(a) (i) Name the structure that allows exchange of substances between the uterine vessels and umbilical vessels. ***(1 mark)***

(ii) State three adaptations of the structure mentioned in (a) that allows exchange of substances by diffusion. ***(3 marks)***

(b) State five functions of the structure in (a) (i) above. ***($2^1/_2$ marks)***

(c) State the directions of blood flow in the: ***(2 marks)***

(i) Uterine artery (ii) Uterine vein (iii) Umbilical artery (iv) Umbilical vein.

(d) State five differences between the composition of blood in the umbilical artery and umbilical vein. ***($2^1/_2$ marks)***

(e) Give reasons for each of the differences stated in (e) (i) above. ***(5 marks)***

(f) (i) Explain why the uterine vein has higher concentration of carbon dioxide than the uterine artery. ***(2 marks)***

(ii) Explain why the uterine vein has the highest composition of urea than all other blood vessels. ***(2 marks)***

Trinity college Nabbingo

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14. A hungry person had a meal, after which the concentrations of glucose and amino acids in the blood were determined. This was measured hourly as the blood passed through the hepatic portal vein in the leg. The results were as shown in the table below.

Time (Hours)	**Concentration of contents in Hepatic portal vein (mg/100ml)**		**Concentration of contents in iliac vein of the leg (mg/100ml)**	
	Glucose	***Amino acids***	***Glucose***	***Amino acids***
0	85	1.0	85	1.0
1	85	1.0	85	1.0
2	140	1.0	125	1.0
3	130	1.5	110	1.5
4	110	3.0	90	3.0
5	90	2.0	90	2.0
6	90	1.0	90	1.0
7	90	1.0	90	1.0

(a) Using the same axes plot a graph of concentration of glucose in the hepatic portal vein and the iliac vein in the leg against time***.*** ***(7marks)***

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(b) Explain the concentration of glucose in the hepatic portal vein from
- (i) **0 to 1 hour** ***(2marks)***
- (ii) **1 to 2 hours** ***(2marks)***
- (iii) **2 to 4 hours** ***(2marks)***
- (iv) **5 to 7 hours** ***(2marks)***

(c) Explain the difference in the concentration of glucose in hepatic portal vein and the iliac vein from 2 to 4 hours. ***(2marks)***

(d) Explain why the concentration of amino acids in the hepatic portal vein took longer to increase. ***(1mark)***

Mt. St. Henrys' High School Mukono

15. A suspension of yeast was added to a dilute sucrose solution and kept at 25°C for 16 days. Each day 10cm^3 samples withdrawn and the number of yeast cells counted. On the fifth day, a small quality of a culture of paramecium was added. The results of the experiment are shown in the table below.

Days	Number of yeast counted	Number of paramecium counted
1	20	0
2	84	0
3	224	0
4	264	0
5	266	30
6	224	150
7	144	168
8	154	76
9	222	72
10	218	138
11	120	162
12	84	96
13	180	54
14	178	90
15	120	144
16	60	120

(a) Plot a graph on the same axes to show how the number of yeast cells and paramecium vary during the period of the experiment. ***(8 marks)***

(b) Name the relationship illustrated by this experiment. ***(1 mark)***

(c) From your answer in (b) above, what type of organism is: ***(2 marks)***

(i) Yeast (ii) Paramecium

(d) Explain the changes taking place in the population of the two organisms over the period of study. ***(6 marks)***

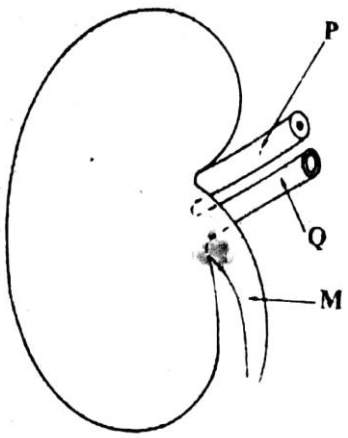
(c) Name the shape of the graph that would be obtained if the yeast had been cultured alone. ***(1 mark)***

(f) Explain why the growth of human population differs from that of wild life? ***(2 marks)***

Ndejje Secondary School

SECTION B PART 2: SHORT ANSWER QUSTIONS

16. The figure below shows a kidney and the tubes connected to it.



(a) Name the

(i) tubes labelled **P**, **Q** and **M**. ***(3 mark)***

(ii) liquid carried by tube M. ***(1/2 mark)***

(iii) structure to which tube M is joined? ***(1/2 mark)***

(b) Give two differences between P and Q in the following;

(i) structure. ***(2 marks)***

(ii) functioning. ***(2 marks)***

(iii) composition. ***(2 marks)***

Tororo Girls School

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17. Excess proteins are broken down in the body. The waste nitrogen compounds produced from these proteins are excreted.

(a) State where the nitrogen waste compounds are produced from. ***(1 mark)***

(b) Describe how the waste nitrogen compounds are;

(i) produced. ***(2 marks)***

(ii) transported. ***(1 marks)***

(iii) excreted. ***(6 marks)***

Mt. St. Marys' Namagunga

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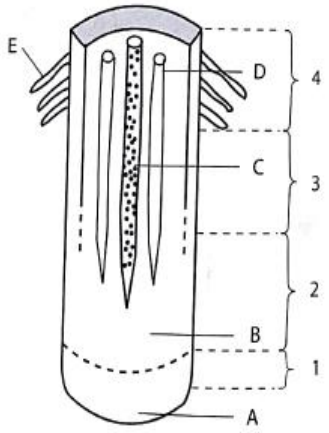
18. The figure below shows a longitudinal section of a dicotyledonous root tip.



(a) (i) Label the parts A to E. ***(2 1/2 marks)***

(ii) State the function of the part labelled A to E. ***(2 1/2 marks)***

(b) (i) Label zones 2 to 4. ***(1 1/2 marks)***

(ii)Draw and label a transverse section of zone 4. ***(3 1/2 marks)***

Green Hill Academy

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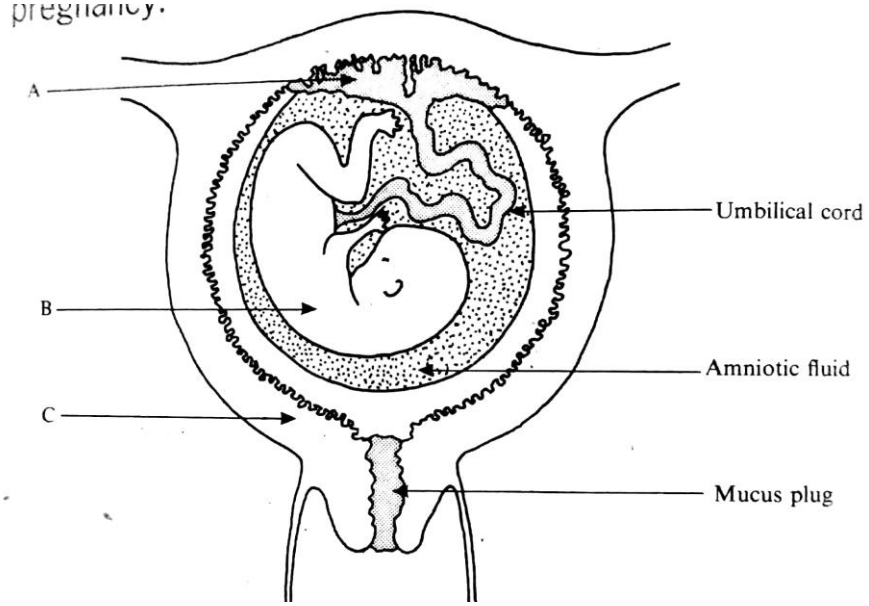
19. The diagram below shows a human uterus during pregnancy.



(i) Name the parts labelled A, B and C. ***(3marks)***
(ii) Give one function for each of the following: amniotic fluid, umbilical cord. ***(2 marks)***
(iii) Name two substances that pass from the mother's blood to the blood of the fetus. ***(2 marks)***
(iv) Use the diagram to suggest three changes that will occur before the birth of a fetus. ***(3 marks)***

St. Josephs Nsambya Girls School

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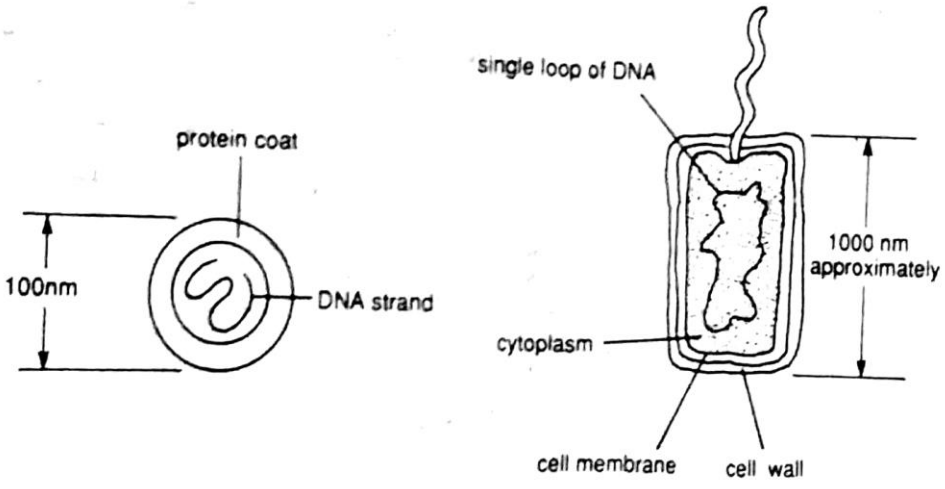
20. The figure below shows organisms which are economically important to man.



(a) Giving two reasons in each case, identify organisms A and B. ***(3 mark)***
(b) Give a comparison between organism A and B. ***(4 marks)***
(c) Outline any three economic importance of organisms B. ***(3 marks)***

Naalya ss Namugongo

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21. (a) What is a recessive gene? ***(2 marks)***

(b) The gene for light skin is recessive to dark skin. When a bleached woman married a light skinned man all their children were dark skinned.

(i) Explain why all the children were dark skinned. ***(2 marks)***

(ii) With symbols, present across for the parents above. ***(6 marks)***

Namungoona Parents School

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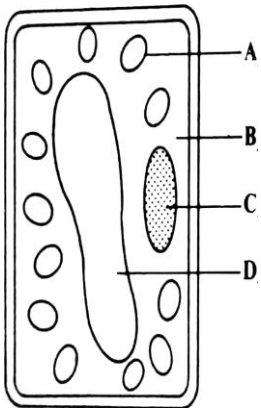
22. The diagram below shows a specialized plant cell.



(a) Name

(i) the specialized plant cell. ***(1 mark)***

(ii) the parts labelled A, B, C and D. ***(2 marks)***

(b) (i) Which two of the structures labelled A, B, C and D would you not find in a human cheek cell.? ***(1 mark)***

(iii) What is the function of part A? ***(1 mark)***

(c) Describe an investigation you could carry out to find out if a leaf contains starch. ***(5 marks)***

Grace High School

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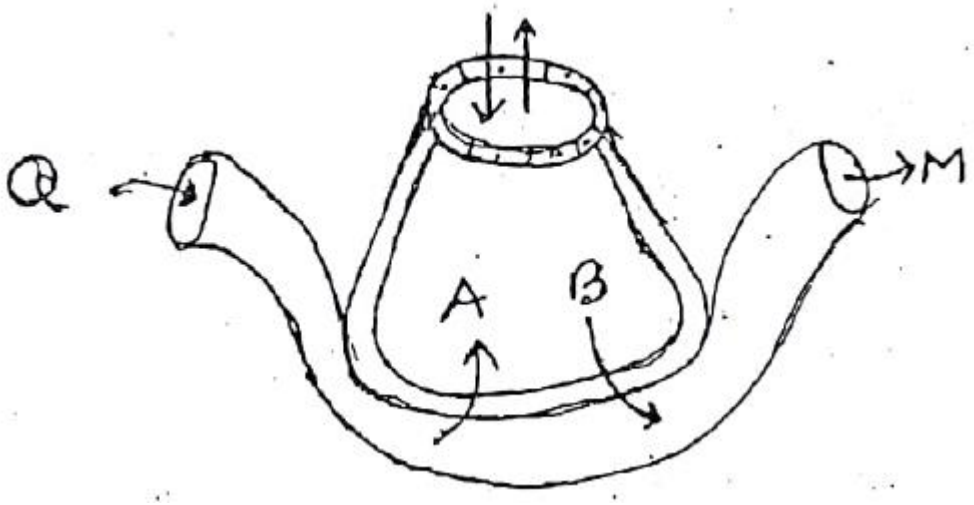
23. The figure below shows gaseous exchange and blood flow in alveolus of mammalian lungs.



a) (i) Name the gases labeled **A** and **B**. ***(2 marks)***

(ii) Explain the difference in concentration of gases named in a(i) above at points **M** and **Q**. ***(4 marks)***

b) From the figure above, give two characteristics.

(i) that increase gaseous exchange. ***(2 marks)***

(ii) maintains concentration gradient of gases. ***(2 marks)***

Cityland College Matugga

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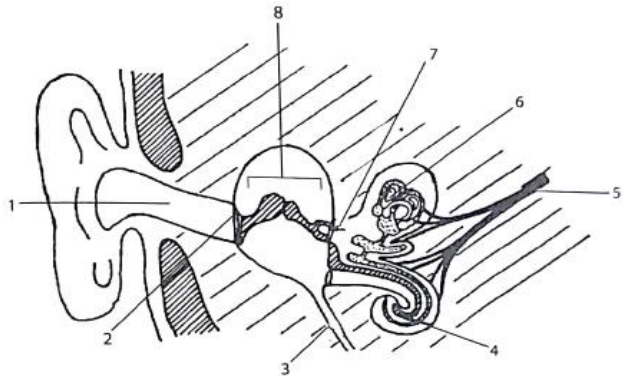
24. Plants absorb substances such as nitrate ions by active uptake from the soil.
    (a) (i) What is meant by the term active uptake? ***(2 marks)***
    (ii) Why do plants need to take in nitrates? ***(1 mark)***
    (iii) Describe the use of another named ion taken in by plants. ***(2 marks)***
    (b) Describe a practical investigation to show that plants need light for photosynthesis. ***(5 marks)***

Busoga College Mwiri

25. The figure below shows the structure of a human ear.



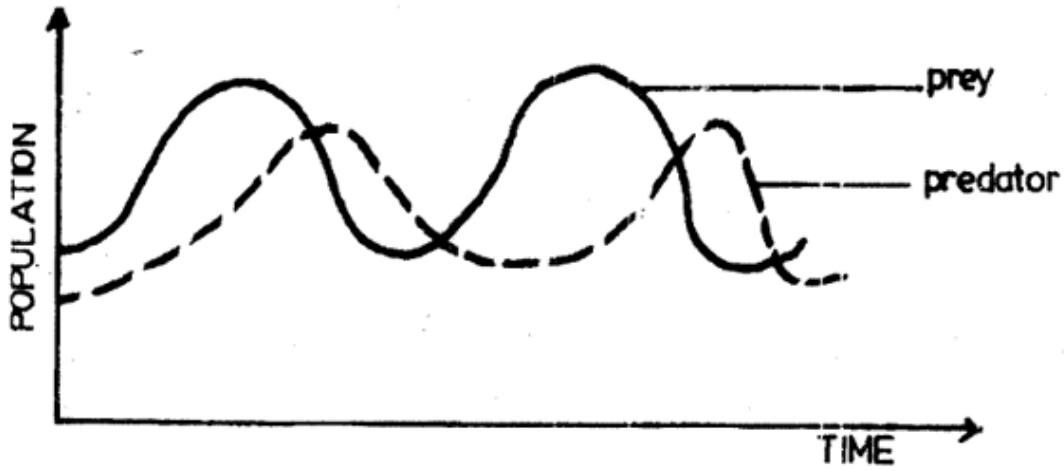
(a) Name the parts labelled 1 to 8. ***(4 marks)***

(b) State the function of parts labelled 2,3,4,5 and 6 ***(5 marks)***

(c) What happens to part 2 when part 3 is blocked? ***(1 mark)***

Kings college Buddo

26. (a) Distinguish between predator and prey? ***(2 marks)***
    (c) The figure below shows predator / prey relationship. Study the figure and answer the questions that follow:



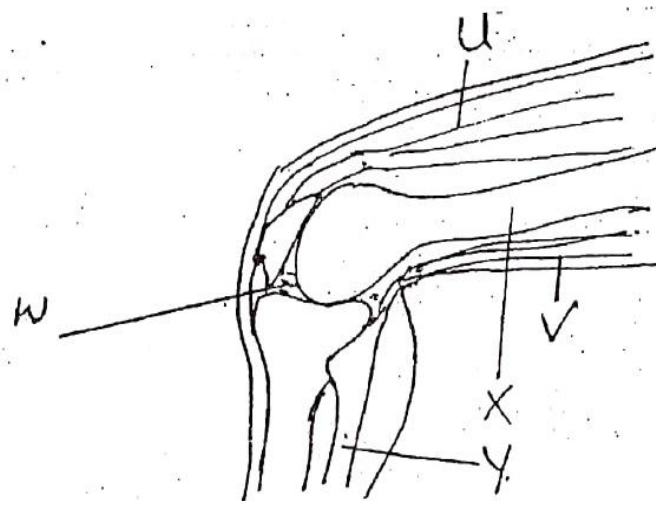
(i) Describe the relationship between the predator and prey***.*** ***(3 marks)***

(ii) Explain the relationship of the predator and prey described in b(i) above***.*** ***(3marks)***

(iii) Name two other external factors that may affect the population of the prey in the habitat. ***(2 marks)***

St Balikuddembe Secondary School

27. The diagram below represents bones and muscles at a certain joint in the human being.



(a) Name bones X and Y. ***(2 marks)***
(b) State two functions of part W. ***(2 marks)***
(c) Describe how muscle U and V move bone X and Y close to each other. ***(4 marks)***
(c) (i) What is an exoskeleton? ***(1 mark)***
(ii) State one advantage of an exoskeleton. ***(1 mark)***

Buddo Senior Secondary School

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28. In a certain ecosystem, hawks feed on snakes, toads and chicken. The snakes feed on toads, lizards and chicken while these feed on worms, termites and grasshoppers. The worms, termites and grass hoppers feed on green plants.

(a) (i) Construct a food web to show the feeding relationship between all the organisms in this ecosystem. ***(04 marks)***

(ii) Construct a food chain to show the feeding relationship between snakes, worms, toads, hawks and green plants. ***(01 mark)***

(iii) From the food chain in (a) (ii) above, construct a pyramid of energy to represent the feeding relationship. ***($2^1/_2$ marks)***

(b) (i) What trophic levels do the following organisms occupy in this ecosystem? ***($1^1/_2$ marks)***

Chicken

Termites

Green plants

(ii) Why are trophic levels in a food chain normally not more than five? ***(01 mark)***

Hilton High School

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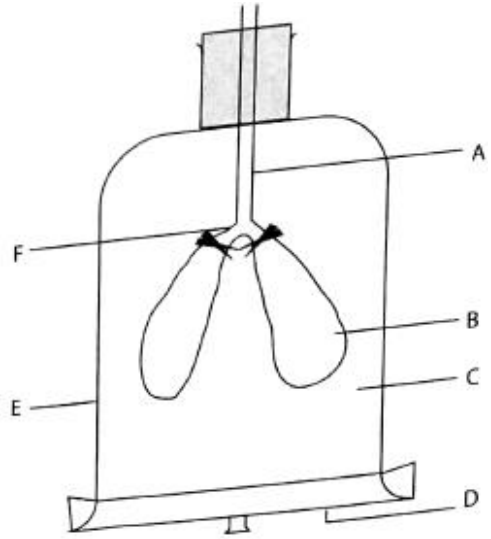
29. The figure below is an apparatus that is used to demonstrate breathing mechanism in a mammal.



(a) What do parts A to F represent in a mammal? ***(3 marks)***

(a) If the part labelled D is pulled down, what would you expect to happen? Give reasons. ***(4 marks)***

(b) What does this apparatus lack in order to give an accurate demonstration of the breathing mechanism? ***(1mark)***

(c) Give other differences between this mechanism and the corresponding mechanism in the mammal. ***(2 marks)***

Light Africa Secondary school

SECTION C: ESSAY QUESTIONS

30. (a) (i) Explain what is meant by a tissue. ***(2 marks)***
(ii) Why is human blood regarded as a tissue. ***(6 marks)***
(b) Organs are made of tissues which perform certain specialized functions. Describe and explain how this statement is true for each of the following organs:
(i) the leaf of a flowering plant. (ii) the human eye. ***(7 marks)***

Uganda Martyrs SS Namugongo

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31. Both photosynthesis and respiration occur in green plants. Compare these two processes using the following;
(a) Raw materials, products, energy conversions. ***(10 marks)***
(b) The main function of each process. ***(1 mark)***
(c) Factors which affect the rate of each process. ***(4 marks)***

Nile High School

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32. (a) Give three primary functions of leaves of a flowering plant. ***(3 marks)***
(b) Explain how the structure and position of leaves relate to the main function of leaves to the flowering plant. ***(12 marks)***

Our lady of Africa

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33. (a) Considering the food chain given below, explain how the energy from the sun is made available for man. Cereal crop ⟶ Grasshopper ⟶ Man ***(7 marks)***
(b) The element nitrogen is absorbed from the soil by plants.
(i) In what form is this element absorbed? ***(1 mark)***
(ii) Name a compound containing nitrogen which is made within the plant. ***(1 mark)***
(i) Explain why nitrogen in soil normally remains constant in nature. ***(6 marks)***

Namilyango College

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34. a) What is excretion? ***(2 marks)***

(b) Using named examples of excretory products, explain the importance of excretion. ***(7 marks)***

(c) State the role of the following parts of the human nephron: ***(6 marks)***

i) Glomerulus
ii) Bowman's capsule
iii) Proximal convoluted tubule

St Joseph's ss Naggalama

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35. Describe the processes involved in the movement of water through a plant as it passes from the soil to the air. ***(15 marks)***

St Johns Secondary Bweyogerere

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36. (a) Briefly describe the role of each one of the following during gaseous exchange in bony fish.

(i) The mouth ***(3 marks)***

(ii) The buccal cavity ***(5 marks)***

(b) Compare the process of inhalation with that of exhalation in fish. ***(7 marks)***

Mpigi Light College

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37. (a) Explain how you get fresh air into your lungs. ***(9 marks)***

(b) How does oxygen in the air in the alveolus reach the heart? ***(6 marks)***

Code High School

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38. (a) Describe how man can hear a gunshot. ***(12 marks)***

(b) How is the human eye lens adapted to its functions? ***(3 marks)***

Lugazi Homestone

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39. (a) Explain how gut organs are adapted to digestion and absorption of the main food value of cooked cassava. ***(12 marks)***

(b) Explain how temperature affects enzyme activity. ***(3 marks)***

Mukono Hillside secondary School

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40. (a) Define the term dispersal as used to fruits and seeds. ***(1 mark)***

(b) State any four importance of fruit and seed dispersal. ***(4 marks)***

(c) Giving at least two examples, state any four adaptations of fruits and seeds dispersed by wind. ***(7 marks)***

(d) Describe the mode of dispersal of a Guava fruit ***(4 marks)***

World Ahead Secondary School

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41. Describe man's activities that lead to pollution of water bodies. ***(15 marks)***

Faith High School

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42. (a) What is accommodation? ***(02marks)***
    (b) Suppose a boy was sitting in a dimly lit room reading a book, then he suddenly stepped out of the room into bright sunshine to look at an aeroplane in the sky Describe the sequence of events which would occur in his eyes to enable him see the aeroplane clearly: ***(09 marks)***
(c) Explain why many old people use glasses to read. ***(04 marks)***

St Michael international school

43. (a) Define the term metamorphosis. ***(1 mark)***
    (b) Describe the life cycle of an anopheles mosquito. ***(10 marks)***
    (c) State the measures that can be taken to control the spread of mosquito-transmitted diseases. ***(5 marks)***

St. Stephen's Senior Secondary School –Ddandira

44. (a) Explain the functions of the parts of a named herbaceous dicotyledonous flower. ***(7 marks)***
    (b) Give an account of the reproductive processes which bring about the formation of a fruit containing seeds. ***(8 marks)***

Mpoma Boys Secondary School -Mukono

45. (a) Draw a labeled diagram to show the internal structure of an organ for absorption in the small intestines. ***(5 marks)***
    (b) Describe how the organ is suited for its function. ***(4 marks)***
    (c) Explain what happens to the end products of digestion when they leave the small intestine. ***(6 marks)***

Mpoma Girls Secondary School

46. (a) Describe the life cycle of a tape worm. ***(8 marks)***
    (b) How is the spread of tapeworm controlled? ***(2 marks)***
    (c) Describe how gut parasites are able to survive. ***(5 marks)***

Good mark SS Namataba

47. (a) With the help of a diagram, describe the events that take place when light falls on a nearby object, that lead it to travel to the retina in a human eye. ***(6 marks)***
    (b) State any eye defects for each case, state its cause and a method used to correct the condition. ***(9 marks)***

Namataba secondary School

48. With the help of a diagram, describe the sequence of events that lead to sudden releasing of a hot frying pan from the hand. ***(15 marks)***

Mariam High School

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49. (a) Describe ways plants in hot and dry area mininise water loss. ***(7 marks)***

    (b) How do plants eliminate their waste products? ***(4 marks)***

    (c) Give the usefulness of any two plant waste products. ***(4 marks)***

Forest Hill High School

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50. (a) Describe the ventilation mechanism in large insects. ***(9 marks)***

    (b) Describe how gaseous exchange system in insects is adapted to carry out its function efficiently. ***(6 marks)***

Excel High School

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51. (a)Explain the importance of earthworms in improving soil fertility. ***(6 marks)***
    (b) Describe an experiment to determine the percentage of air in a soil sample. ***(9 marks)***

Mpoma Royal Secondary School

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52. (a) Define the following terms as applied to genetics.
    (i) Codominance. ***(1 mark)***
    (ii) complete dominance. ***(1 mark)***
    (iii) sex linked gene ***(1 mark)***

    (b) Haemophilia is a sex linked character caused by a recessive gene carried on the X-chromosome. A carrier woman marries a normal man. Using suitable genetics symbols;

    (i) work out the genotypes and phenotypes of their children. ***(7 marks)***

    (ii) what is the probability of the couple getting a haemophiliac son? ***(1 mark)***

    (a) Both Haemophilia and colour blindness are sex-linked; explain why in any given population, there are more people with colour blindness than those with Haemophilia. ***(2 marks)***

    (d) Give two modern applications of Genetics. ***(2 marks)***

Balibaseka Kakiri

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53. (a) What do you understand by the term gland? ***(1 marks)***
    (b) A wrestler faces a very aggressive opponent in a hotly contested fight. Explain the physiological changes that occur in his body to prepare him for the fight. ***(10 marks)***
    (c) Outline four ways the effects produced by hormones differ from withdrawal of a hand from a switch due to electric shock. ***(4 marks)***

Exodus High School Mukono

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54. (a) Describe how a plant leaf is adapted for gaseous exchange. ***(3 marks)***
    (b) Describe an experiment to show that carbon dioxide is necessary for photosynthesis to take place. ***(8 marks)***
    (c) Explain any two importance of photosynthesis. ***(4 marks)***

Kojja Secondary School

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55. (a) Describe the processes in blood vessels which form a blood clot. **(*05 marks*)**
(b) Explain **three** major precautions that must be considered before a successful blood transfusion. **(*07 marks*)**
(c) Outline any three lines of defense against bacteria entering the blood system. **(*03 marks*)**

St Janan S S kabalagala

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56. (a) Compare monocotyledons and dicotyledons, using **structural** features. **(*9 marks*)**
(b) Giving an example in each case, describe two modifications of each of the following for carrying out secondary functions. **(*6 marks*)**
(i) Leaves (ii) Stems (iii) Roots. ***(6marks)***

Noah's Ark SS

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57. Growth and reproduction are two important characteristics of living things.
(a) State the similarities and differences between growth and development. ***(4 marks)***
(b) Describe how the radicle of a germinating seed grows in length. ***(3 marks)***
(c) In reproduction the offspring may be genetically similar or dissimilar to the parent(s). With reference to asexual and sexual reproduction in named plants, explain how this can come out. ***(8 marks)***

Kiira College Butiki

PRACTICAL

58. You are provided with specimen **W** and **X**, and solutions **P** which is a common laboratory reagent and distilled water. You are to carry out tests on specimen **W** and **X**, using solution **P** to investigate action of contents of specimen **W** and **X** on solution **P**.
(a) Label four test tubes as **A, B, C** and **D**. Add solution **P** and distilled water test tubes **A, B, C** and **D** as instructed in the table below.

Test tube	Add Solution **P**	And add distilled water
A	$3cm^3$	0
B	1 cm^3	2 cm^3
C	0	3 cm^3
D	3 cm^3	0

- Cut 6 cubes from specimen **W** each of dimensions 1cm x 1cm. Also cut 2 cubes from specimen **X** each of dimensions 1cm x 1 cm x 1cm.
- Carry out the tests in table 2, record all your observations and deductions in the table

Test	Observations	Deductions
(i) To test tube **A**, add 2 cubes from specimen **W**		
(ii) To test tube **B**, add 2 cubes from specimen **W**		
(iii) To test tube **C**, add 2 cubes from specimen **W**		
(iv) To test tube **D**, add 2 cubes from specimen **X**		

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(b) Explain the results obtained in test tube **A, B,** and **C.** ***(6 marks)***

(c) Explain the difference between results obtained in test tube **A** and **D**. ***(03 marks)***

(Solution P is made by dissolving 100cm^3 *of 20 volumes of hydrogen peroxide in 900*cm^3 *0f water to make 1litre of the solution, W-Irish potato tuber, X-small piece of liver, size of 2 beans)*

Iganga SS

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59. You are provided with specimen **P, Q, R** and **S**, which are parts of different plants. Cut specimen **Q** longitudinally. Examine the specimens as you answer the following questions.

(a) Examine the leaves on specimen **P**, and state the class of plants from which specimen **P**, was obtained. Give two reasons for the class stated. ***(2 marks)***

(b) Examine specimen **R**, and explain how the specimen adapts the plant to survive on land. ***(3 marks)***

(c) Examine the leaves of specimen **S** and the inner leaves of specimen **Q.** Give three differences between specimen **S** and specimen **Q**, basing on their leaves, in table ***(3 marks)***

(d) (i) Examine the stem of specimen **P, Q, R** and **S**, and state three descriptive features of the stems in table. (Don't consider leaves)

(ii) From the descriptive features stated in table 4, construct a dichotomous key for identifying specimens **P, Q, R,** and **S** ***(03 marks)***

(e) Draw and label the lamina of a leaf of specimen **S** ***(05 marks)***

(Specimens: Stem with leaves, no roots of Commelina spp-P, Onion bulb-Q, Lantana camara-R and Pumpkin-S)

Ndejje Secondary School

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60. You are provided with specimens B, C and D which are animals.

(a) State the phylum and class to which they belong. Give three reasons for the phylum and class stated. ***(7 marks)***

(b) Examine specimens C and D using a hand lens where necessary, and describe three structural differences between the specimens. ***(3 marks)***

(c) (i) Describe the wings of specimen B. ***(2 marks)***

(ii) How are the wings of specimen B adapted to their functions? ***(2 marks)***

(d) Cut off the wings of specimen B as close to the body as possible. Draw and label the dorsal view of the thorax with the right hind leg. ***(6 marks)***

(B - Cockroach C - Housefly D – Soldier termite)

Seroma Christian High School

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61. You are provided with specimens **K**, **L** and **M** which are plant parts. Cut transverse sections of specimens **K** and **L**.

(a)(i) Identify the plant part to which all the specimens belong. Give two reasons for your answer. ***(3 marks)***

(ii) State four structural differences between specimens K and L. ***(4 marks)***

(b) Using observable features, describe how each specimen is dispersed. ***(6 marks)***

(c) Draw and label the mesocarp of specimen L. ***(7 marks)***

(K-Mango fruit, L-orange fruit, M-castor oil fruit or thorn apple fruit)

Iganga High School

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SEROMA CHRISTIAN HIGH SCHOOL

O' LEVEL BIOLOGY SEMINAR

PROGRAMME LINE UP

DATE: SATURDAY, 22ND JUNE, 2019

	ACTIVITY	TIME
1.	Arrival and settling of participants in their seats	7:30 am to 8:00 am
2.	Opening Prayer, Welcome remarks and Briefing	8:00am to 8:05 am
3.	Discussions for theory	8:05am to 1:00pm
4.	Concluding remarks in theory	1:00pm to 1:15 pm
5.	Lunch break	1: 15pm to 2:15pm
6.	Discussions for practicals	2:15pm to 3:00pm
7.	Practical facilitation	3:00pm to 4:40pm
8.	Closing remarks and closing prayer	4:40pm to 4:45pm
9.	Departure of visiting schools	4:45pm to 4:59pm

Note:

- The students should rehearse presenting their question in **less than 10 minutes.**
- Schools that are supposed to discuss questions involving plotting should **plot** their graphs on **graph papers** and come with them to be scanned and projected.
- Those wishing to present using power point are encouraged.
- Those presenting practical questions should do the practical from their school and present their results on day for the seminar.

We wish you safe journeys.

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