KYADDONDO SS HOLIDAY PACKGAGE 2026

GEOGRAPHY

ITEM 1

During a recent geological survey in the Great Rift Valley region of East Africa, scientists observed several zones where the Earth's crust had fractured due to intense horizontal and vertical forces. Some areas were uplifted forming high ridges and mountains bordered by steep slopes, while others subsided forming elongated depressions that now host lakes and rivers. The surrounding landscape showed clear evidence of vertical displacement of rock layers and escarpments marking the boundaries of the faults.

In some parts of the region, like the Rwenzori Mountains, massive uplifted blocks rise sharply between deep valleys, while in others, such as the floor of the Rift Valley, elongated depressions extend for hundreds of kilometers. Farmers and settlements are found along the valley floors where soils are fertile, and escarpment slopes are used for livestock grazing. However, the area remains prone to earthquakes and land instability.

TASK

a). Describe the processes that lead to the formation of block mountains and rift valle**y.** (10 scores)

b). Discuss the impacts of these landforms on human activities in the region. (10 scores)

ITEM 2.

In studying global landforms and the distribution of continents, a team of geologists discovered striking similarities between the eastern coastline of South America and the western coastline of Africa. They found that when these continents are placed together, they seem to fit almost perfectly and discovered on continents that are now separated by vast oceans.

The scientists also noted that certain mountain ranges, such as the Appalachian Mountains in North America and the Caledonian Mountains in Europe, appear to be continuations of each other. These findings led them to revisit an early 20th-century theory that suggested all continents were once joined together in a single massive landmass

TASK

Discuss the significance of Wegner's theory of continental drifting in shaping the present-day distribution of continents and ocean basins. (20 scores)

ITEM 3

In the countries of East Africa, a dormant volcano recently showed signs of volcanic activity, including tremors, gas emissions, and minor eruptions. The surrounding region features several volcanic landforms, the government has asked your geography team to assess the landscape and recommend safe zones for resettlement and tourism development.

USER MATERIAL

TASK

Identify and **describe** different volcanic landforms formed by extrusive volcanic activity and show how volcanicity is connected to the earth interior. (20 scores)

END

ITEM1. Alata and Banabba are investment groups. The total membership of Alata is six people more than Banabba. One day, the government gave UGX.1million to each member of Alata. Banabba received a total of UGX.24 million which was equally distributed among all group members. However, it was observed that the total amount of money received by Alata plus that of one individual from Banabba was less than UGX.20million, hence the auditors wish to know the minimum and maximum number of people from both groups who benefited in this arrangement.

Task. Help the auditors in determining the range of people who benefited in this arrangement.

ITEM2. Mulisa was informed that the rectangular plot he wishes to buy has a diagonal length of 450m. Since total distance around it is 1240m, Mulisa is interested in knowing the space occupied by this plot of land. Upon buying the land, Mulisa plans to set up a retail shop and a bakery where he intends to invests an initial capital of UGX.10million in a shop and UGX.30million in a bakery. In this, the initial capital of the retail should will be expected to grow at the rate of 10% per annum while that of the bakery will grow at the rate of 21% per annum. Mulisa wishes to know how it takes for the total capital in both to reach UGX.100 million.

- Task.

1. a. Help Mulisa to determine the space occupied by the plot of land he wishes to buy.
2. b. How long does it take for the total capital in both of his two businesses to reach UGX.100 million?

ITEM3. Lumu wants to start saving such that by the end of 2026, he can make an investment worth UGX.50millions. He is thinking of two approaches of achieving the investment plan. For the first approach, he thinks to start investing UGX.20 million in the beginning of every month into a fixed bank account which offers a monthly compound interest of 15%. If he is to go with this idea, he wants to start with beginning of April/2026. In second idea, Lumu thinks of ensuring to have saved UGX.20million by 13/03/2026. Then from this date until the end of the year, to consistently save UGX.100,000 every day. He wants to know which of the two ideas will help him to attain his investment plan.

Task. Help Lumu to choose the best saving approach which will enable him attain his investment plan.

ITEM4. Company A pays workers in two sections day time and evening session. For the day session, the company derives each worker's total payment by multiplying $3 on the square of worked hours and for evening session the company simply multiplies $2 on hours worked. Alex works equal hours in both day and evening session at company A.

However, Peter and Tom work in company B which pays differently from A. In comparison, Peter's daily payments are $8 plus the square of Alex's daily earnings while Tom's daily payments are nine times Alex's daily earning. Both Peter and Tom earn equally since they work for the same number of hours!

- Task.

3. a. How many more times does Peter earn compared to Alex?
4. b. Calculate the total earnings of Peter and Tom on a daily basis.

ITEM5. "My father's age is the square of mine and my mother's is the square of my brother. My father is fifteen years older than my mother. Our sister's age is the sum of both my brother and I." I am challenging you to express the sister's age in terms of the mother's age and hence determine the actual age of my father given that our elder sister is actually fifteen years.

Besides, I have wire bent to form a right-angled triangle design of base 4cm and height 5cm cost $4, I challenge you to determine the exact price of a 10cm wire.

- Task.

5. a. Workout the age challenge.
6. b. Determine the exact price of a 10cm wire.

ITEM6. On a back-to-school shopping, a certain shop was selling 5books, 7pens with 3pencils at UGX.37,000 and 3books, a dozen of pens with 4pencils at UGX.45,000 but 7books, 2pens with a dozen of pencils costs UGX.44,000. Alice went to the shop and gave in UGX.50,000 to the retailer to clear a bill of six books, six pens and nine pencils. She wishes to know the change she has to receive.

Task. How much money should Alice receive as her change?

END

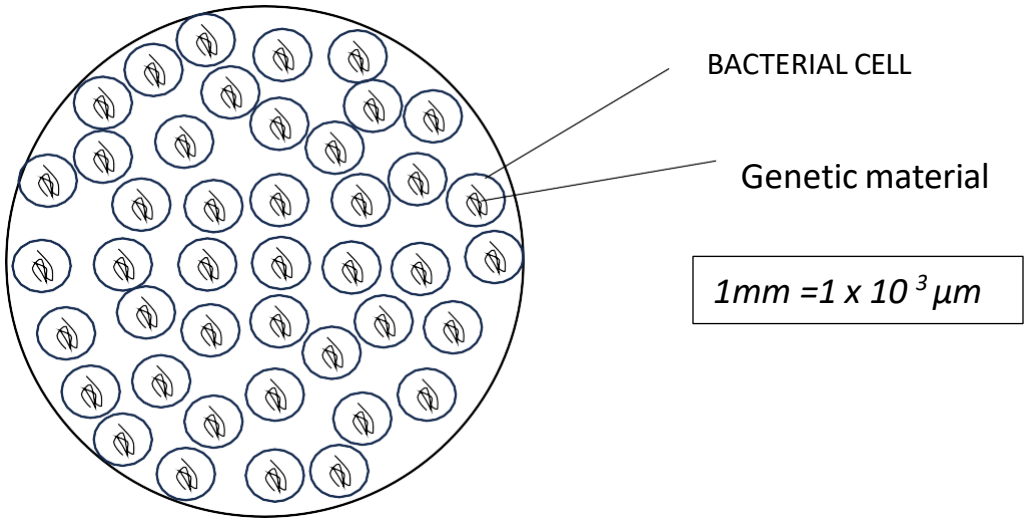
"Every Battle is won or lost before it is fought"

SECTION A

ITEM 1

Two groups of S.5 biology learners were selected by their biology teacher. The groups were named **X** and **Y**.

a) Learners in group **X** were given a small bottle containing dirty water that was obtained from the shores of lake Katwe, a salty lake. They were tasked to observe a sample of this water under a compound light microscope using a medium power objective lens. The learners observed microorganisms which were confirmed as bacteria but lacked peptidoglycans in their cell wall. The diameter of the field of view was **1.5mm**. The diagram below shows the number of bacterial cells that were observed in the field of view.



Task

i) Giving reasons from the scenario above, identify the group of bacteria that were observed. (3 scores)

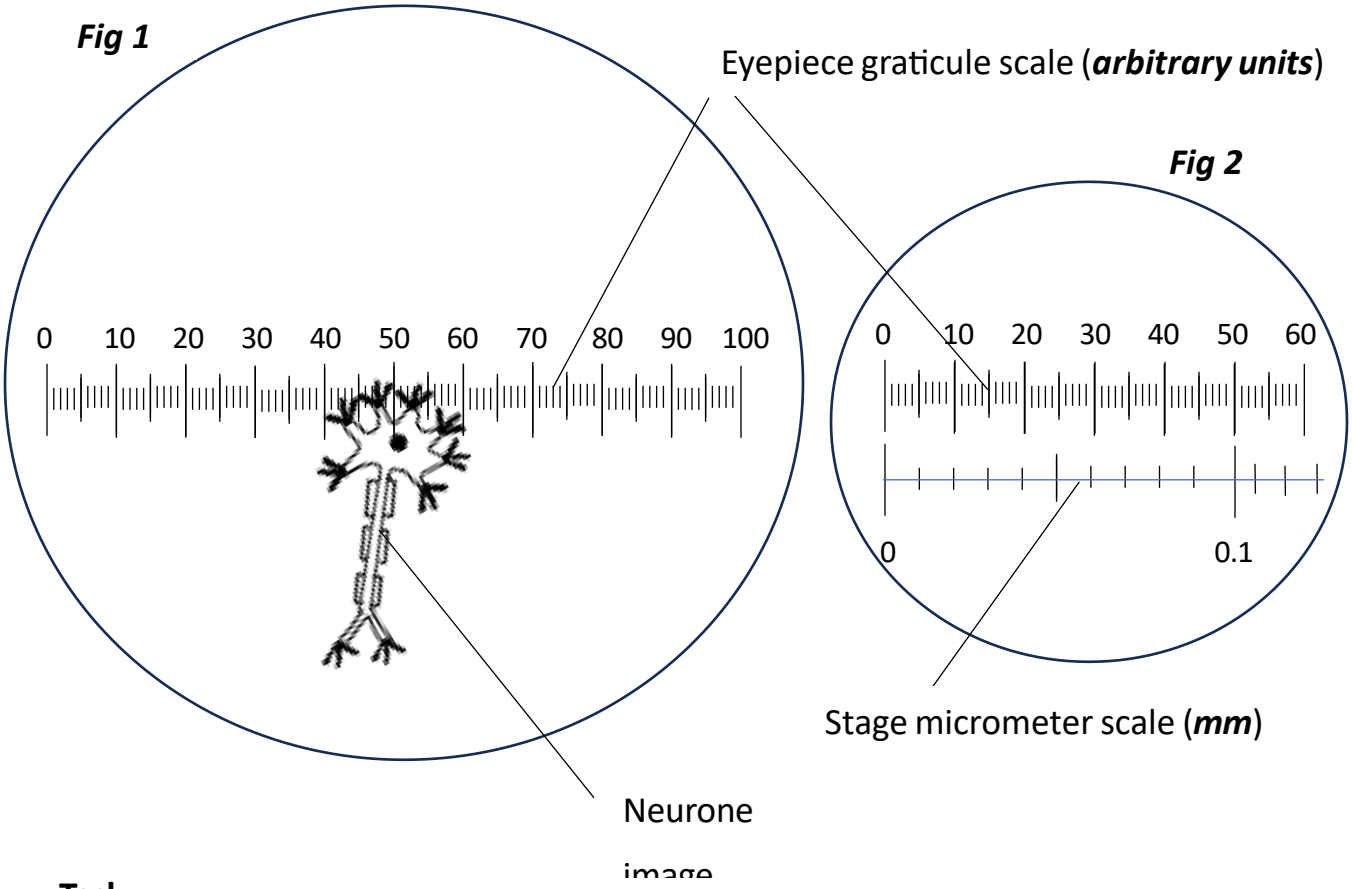
ii) Describe the shape and composition of the genetic material of the bacteria mentioned in (i) above. (2 scores)

iii) Determine the actual diameter of one bacterial cell in the field of view. Express your answer in **µm**. (3 scores)

b) Learners in group **Y** were given a prepared slide of a neurone. They were tasked to observe the specimen on the prepared slide under the microscope whose eye piece contained an eyepiece graticule that was previously calibrated using a stage micrometer.

The diagrams below in ***fig 1*** and ***fig 2*** show both the image of the specimen and

the calibration procedure respectively.



Task

i) Identify the type of neurone that was observed in ***fig 1.*** *(1 score)*

---

ii) Using both ***fig1*** and ***fig2***, determine the actual diameter of the cell body of the neurone. Express your answer in **mm**. (***NB. Consider the cell body as a*** combination of all the structures above the axon) (4 scores)

---

iii) How does the structure of the neurone identified in b(i) relate to its function? (5 scores)

iv) What is the significance of cell size measurements in the field of medicine?

(2 scores)

ITEM 2

During a recent study at Mbarara University, researchers in dermatology have discovered that glycerol-based lipids containing **Oleic** and **Stearic** fatty acids are one of the most effective and healthiest organic skin moisturisers and insulate the body against heat loss. The researchers also discovered that shea nut is an ideal source of these fatty acids. The faculty of dermatology has therefore decided to establish facilities that can isolate **Oleic** and **Stearic** fatty acids from shea nut seeds to be used in the manufacture of skin care products. Oleic and Stearic fatty acids have the molecular formulae $\mathbf{C_{17}H_{33}COOH}$ and $\mathbf{C_{17}H_{35}COOH}$ respectively. These two fatty acids are reacted with glycerol to form **Triolein** and **Tristearin** respectively.

Task

a) As a learner who has knowledge about lipids, show how Triolein and Tristearin can be manufactured by the dermatologists to be used in making skin care products. (8 scores)

b) With a reason, identify the type of reaction that leads to formation of Triolein and Tristearin. (2 scores)

c) Giving a reason in each case, suggest which of the two products is:

i) A liquid at room temperature (2 scores)

ii) A solid at room temperature (2 scores)

d) Explain the physiological functions of lipids in the body of an organism.

(6 scores)

ITEM 3

In a laboratory experiment, a group of biology students isolated chloroplasts from spinach leaves and exposed them to light under controlled conditions.

The setup included a light source and a suspension medium containing Adenosine diphosphate (ADP) and inorganic phosphate but **no** Nicotinamide Adenine Dinucleotide Phosphate (NADP) was added. After sometime ATP was produced but there was no evidence of NADPH formation or oxygen released.

Task

(a) Based on experimental setup, identify the type of photophosphorylation taking place and give reasons for your answer. (03 scores)

(b) Explain why no oxygen or NADPH was produced during the experiment.

(05 scores)

(c) Outline the pathway of electron flow in this process and name the key photosystem involved. (10 marks)

(d) Why is this process important to the plant under certain conditions?

(02 scores)

SECTION B

Attempt both items in this section

ITEM 4

Research indicates that the initial stages of metabolism of glucose takes place in the cytoplasm of the living cell where glucose is converted to pyruvate. The pyruvate can be further metabolized in the mitochondria liberating more energy stored inform of ATP which can be used for various biological processes in the

bodies of living organisms.

Task

(a) As a biology student who studied cellular respiration, identify the initial stage of metabolism of glucose that occurs in the cytoplasm of living cells. (01 score)

(b). Describe the various stages that the glucose undergoes till formation of the pyruvate in the cytoplasm of the living cell. (13 scores)

(c). Explain the biological significance of ATP in living cells. (06 scores)

ITEM 5

Allan is one of the best foot ballers playing for Uganda Cranes. Much as he is not a medical doctor, he bought a stethoscope because he enjoys listening to the sounds of his heart before and during the usual training sessions. Whenever he listens to his heart in a single beat, he hears two sounds that are produced in close proximity, occurring one immediately after the other. When he inquired from a professional cardiologist he was told that the two sounds are normal and are called “lub” and “dub” respectively. Allan further discovered that the two sounds
are produced faster during the training sessions than when he is at rest. About this, the cardiologist told him that whenever one engages in a vigorous exercise, the heart rate increases and so the “lub” and “dub” sounds are produced faster.

Task

a) Describe the events that occur during the cardiac cycle leading to the “lub” and “dub” sounds. (8 scores)

b) Explain the difference in the heart rate observed before and during the training sessions (12 scores)

END

PART ONE

Item 1

(a) Three balls are drawn at random one after the other without

Replacement by a senior three student from a bag containing 21 white, 9 blue and 40 red

Balls. he wishes to know the chance 0f selecting the balls of the same color and also the chances of selecting the balls of different colors

Task; As the mathematics student help the senior three student to know the two chances.

(b) Tom is to travel from Lira to Kampala for an interview. The probabilities

that he will be in time for the interview when he travels by bus and taxi are

0.1 and 0.2 respectively. The probabilities that he will travel by bus and

taxi is 0.6 and 0.4 respectively.

Task:

(i) Find the probability that he will be on time.

(ii) Given that he is not on time, what is the probability that he travelled by taxi?

Item 2

A news agent stocks 12 copies of a magazine each week. He has regular orders for nine copies, and the number of additional copies sold varies from week to week. The news agent uses previous sales data to estimate the probability for each possible total number of copies solid, as follows:

Number of copies	9	10	11	12
Probability	0.20	0.35	0.30	0.15

Task

a) Calculate the expected number of copies that he sells in a week
b) The news agent buys the magazines at 1500/- each and sells them at 2000/- each. Any copies left unsold are destroyed.
   i) Find the profit on these magazines in a week when he sells 10 copies
   ii) Construct a probability distribution table for the news agent's weekly profit from the sale of these magazines. Hence or otherwise, calculate the expected weekly profit

PART TWO

ITEM 3

A group of forty-five women did go to Health Centre V for antenatal care during the month of August 2024. Their ages were collected as started below;

17	17	17	19	19	19	20	22	22	22	23	23	24	25	25
25	26	26	26	26	27	27	28	28	28	29	29	29	30	32
32	32	34	34	35	35	35	35	36	37	38	38	44	45	48

The nurses in charge of the care to the pregnant mothers were tasked to find the median ages, standard deviation and as well fine the 75% age of these mothers. For it was to be forward to the District healthy commission to make certain decision on providing better family planning options in case the 75% was greater than 38 years or build a bigger expecting mother's ward incase the median age was less or below 28.

Task:

a) Construct a grouped frequency table for the women's ages, using intervals 17 − 20, 21 − 24, and use it to determine the standard deviation of the age of pregnant mothers.
b) Draw a statistical diagram that you will use as a basis for the district health commissioner to make a decision on what of the two options they should consider

PART THREE

Item 4

The engineer designed a structure to hold a poster freely suspended in air. A mass of 2kg lies on a rough plane inclined at 30^0 to the horizontal. One end of a light inextensible string is attached to this mass and the string passes up the line of greatest slope and over a smooth fixed pulley at the top of the slope; a freely suspended mass of 5kg is attached to its other end. The system is released from rest; as the 2kg mass accelerates up the plane, it experiences a constant resistance to motion of 14N owing to the roughness of the surface.

Task: As a mathematics student;

Calculate:

(a) the acceleration of the system

(b)the tension in the string

(c) the distance traveled by the 5kg mass after 5 seconds.

(d) the reaction at the pulley.

Item 5

A big billboard in the city center ABCD is a rectangle with $AB = 4cm$, and $BC = 3cm$. Forces of magnitude 2N, 1N, 5N, 6N, and 7N act along the line AB, BC, CD, AD, and AC respectively, in each case the direction of the force being given by the order of the letters. Side AB is horizontal.

A school sign post ABC is in form of an equilateral triangle. Forces of magnitude 12N, 10N and 10N act along the line AB, BC and CA, respectively, in each case the direction of the force being given by the order of the letters. AB is horizontal

Task

determine The magnitude and direction of the resultant force acting on the

(a) Billboard
(b) School sign post

PART FOUR

Item 6

The company has a model of the system whose function is expressed as $5x - 3\cos x = 0$. The companies manage wishes to find the solution to the function.

Task: As a mathematics student;

(a) Show that the equation has a real root between x=0 and x=1.

(b) Using linear interpolation, find the first approximation for this root to two decimal places.

(C) Using the Newton-Raphson formula to find the value of this root correct to 2 decimal places.

Item 7

The area of a certain plot of land is given by $A = \frac{xyz}{x+y}$. Given that the dimensions of the plot of are $x = 5$, $y = 14.18$ and $z = 8.1$, all rounded off to the given decimal places.

Task

(a) Find the interval within which the actual area lies
(b) Calculate the percentage error made in determining the area.

END