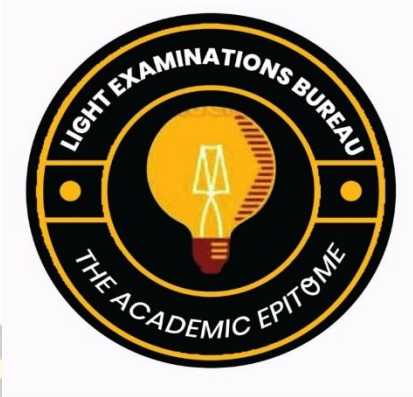




LIGHT EXAMINATIONS BUREAU(LEB)

“The Academic Epitome”

SENIOR THREE END OF YEAR HOLIDAY PACKAGE 2024

MATHEMATICS

Student's Name.....Stream.....

LIN No.....Expected Score.....%

INSTRUCTIONS TO SEMI CANDIDATES:

Attempt all items.

ITEM ONE

Lutaaya is designing a skateboard ramp. He wants to create a straight incline from the ground to the top of the ramp, which is 3m above the ground. The ramp's length is 8m. He has been challenged and he has approached you to help him out.

Hint: The ramp starts at (0,0) and ends at (8,3)

TASK

As a mathematics student, help Lutaaya to come up with the final equation of the straight line representing the incline of the ramp and help him know the meaning of all the terms used in the obtained equation.

ITEM TWO

A survey team was tasked with determining the height of a historic light house located on a small island. The team measured the angle of elevation to the top of the light house from two different points on the ground, A and B, which were found to be 50m apart. It was found out that from point A, the angle of elevation was 35° and from point B, the angle of elevation was 28° . The survey team has approached you for assistance.

TASK

As a mathematics student, help the survey team to determine:

- (a). the height of the light house in meters.
- (b). the distance from point A to the base of the light house in meters.
- (c). the distance from point B to the base of the light house in meters.

ITEM THREE

Your mother operates Masavu Outside Catering Company. Of recent, she received booking calls from two customers who were organizing two different events, a birthday and a get together party. She gave you a list of the major ingredients she will need to cook cabbages and chicken at the two events such that you help her budget for her total expenditure for the two events.

BIRTHDAY PARTY:

CHICKEN: 1Kg of onions, 20 tomatoes, 3liters of cooking oil.

CABBAGES: 0.5Kg of onions, 16 tomatoes, 2liters of cooking oil.

GET TOGETHER PARTY:

CHICKEN: 3Kg of onions, 50 tomatoes, 4liters of cooking oil.

CABBAGES: 2Kg of onions, 35 tomatoes, 1.5liters of cooking oil.

UNIT COSTS:

A Kg of onions is Ugshs.12,000, a tomato costs Ugshs.500 and a liter of cooking oil is at Ugshs.10,000.

TASK

- (a). What will be the total quantity of each ingredient she will need for chicken and cabbages respectively for a combination of the two events?
- (b). How much money will she need for both chicken and cabbages respectively for a combination of the two events?
- (c). If the total amount on the budget for both events is Ugshs.700,000. Help her identify which percentage of the total amount will be spent on purchasing ingredients for the two events.

ITEM FOUR

In a mathematics lesson, Mr. Gregory taught about vector triangles and used a projector while conducting the lesson. At the end of the lesson, he projected an activity but Mutebi, your fellow student remained confused about the way to approach the activity. Below was the activity:

In the vector triangle OAB, M is a point on AB such that $AM:AB = 2:5$

Express:

- AM in terms of AB
- MB in terms of AB
- AB in terms of AM
- AB in terms of MB
- OM in terms of OA and AB
- OM in terms of OB and AB

TASK

Help Mutebi to know how best he can come up with the solutions to the projected activity.

ITEM FIVE

A manufacturing company produces three products, A, B and C. The production process involves three departments: Assembly, Painting and Packaging. The time spent in each department for each product is:

Product A: 2 hours Assembly, 1 hour Painting, 3 hours Packaging

Product B: 3 hours Assembly, 2 hours Painting, 1 hour Packaging

Product C: 1 hour Assembly, 3 hours Painting, 2 hours Packaging

The company operates 8 hours a day.

The management has approached you for assistance.

TASK

Help the company management to determine:

- (a). the daily production capacity for each product.
- (b). the total daily time spent in each department.
- (c). the optimal production mix.

ITEM SIX

A local hospital is tracking patient outcomes for two treatments, A and B, for a specific disease. Treatment A has a 70% success rate while treatment B has an 80% success rate. However, the medical doctors of this hospital found out that treatment B has a 20% chance of side effects.

A new patient, Edward is considering these treatments.

TASK

- (a). Determine the probability that Edward will succeed with treatment A.

- (b). Determine the probability that Edward will succeed with treatment B without side effects.
- (c). Determine the probability that Edward will experience side effects with treatment B.
- (d). Identify which treatment has a higher probability of successful outcome without side effects.

ITEM SEVEN

A landscape architect designed a rectangular garden with a fixed perimeter of 60m. The length of the garden was 5m more than its width.

Hint:

$$\text{Perimeter}(P) = 2L(\text{Length}) + 2W(\text{Width})$$

$$\text{Length}(L) = W(\text{Width}) + 5$$

TASK

Calculate the dimensions of the garden and hence determine its area.

END

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MERRY CHRISTMAS AND A HAPPY NEW YEAR 2025