ACEITEKA JOINT MOCK EXAMINATIONS 2024

Uganda Certificate of Education

MATHEMATICS

Paper 1

Time: 2 Hour 15 Minutes

INSTRUCTIONS:

Both items in *Section A* are compulsory.

Section B has part *I* and part *II*. For each part attempt only one question.

Use none programmable scientific calculators.

All working should be written in the answer booklet provided.

SECTION A

(Attempt both items in this section)

ITEM 1

A gym instructor has just bought some rolls from a dealer that can be subdivided into smaller mats to be used during floor exercises the rolls are 80m², 150m² and 60m², the instructor wants to cut them for resale to his clients who come to the gym without one at UGX 25,000 each, but cannot establish the exact dimensions that he can use such that all small mats cut out, are of the same area. As his friend, he knows that you can help him using your mathematical skills so he asks you to do so.

On a good day he made a collection amounting to eight hundred fifty thousand shillings of which he is to use, 15% is to be banked, 1/5 of the remainder for utility bills and the rest will be shared with his brother taking 3 parts and the instructor taking 2 parts as they had agreed as joint owners of the business, so he gives you all the money and asks you to send his brother's share on his mobile money account.

TASK:

a) Using your mathematics skills show your friend how much money he will earn from the resale of the gym mats he will get from the rolls.

b) Show your friend how you came up with the amount you have sent to his brother.

ITEM 2.

A carpenter has decided to start his own company, he has rented a small room where he will store his products, he has only UGX. 120,000 remaining that he wants to use to make tables and chairs as his first products, he knows that a chair will cost him UGX. 20,000 to make while a chair will cost him UGX. 12,000, but each table will get him a profit of UGX.80,000 while a table can get him a profit of UGX. 45,000 the space remaining in his store can accommodate at least 8 items altogether, he needs your help to decide how many tables and chairs he should make in order to maximize profit.

At the workshop he makes sofa sets, a set of 3 small chairs and one big chair costs UGX. 1500,000 while a set of 2big and one small costs UGX. 2,000,000 he has got a client who wants to buy one small chair and one big chair but he does not have the price for individual items.

TASK:

a)(i) write mathematical inequalities and expressions showing the conditions for the carpenter.

(ii) use the inequalities to help him decide on the number of tables and chairs he can make so as to maximize profit.

(b) what price should he charge the client for each item.

SECTION B

PART 1.

Attempt one item from this part.

ITEM 3

A company making soft drinks M, N and F wants to start producing its drinks according to the market demands so a research is done by giving any respondent a drink of his preference in a certain town, of the 45 people that responded, they found that the number of those who liked M was equal to those who liked N,10 liked M and F ,11 liked F and N while 6 liked M and N only, 26 liked F and 5 liked M only, the number of those who liked F only was double those who liked N only.

Task:

(a) Which drink should be produced more and why.

(b) If a person is chosen at random from that town what is the probability that he does not like any of the drinks made by the company.

ITEM 4:

A village cyclist club wants is to select members that are to participate in the district cycling competition, they registered 60 people for the race from which they are to do the selections which is in two phases.

Those who will qualify for phase two from phase one, will be those who could finish within a time less than the overall average time for all participants. Those in phase two to qualify for the district competitions, have to finish within 125 minutes and less.

3

Below is the summary of time in which the people finished the race in phase one;

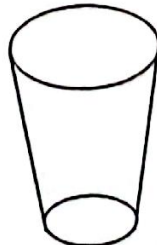| Finish time (mins)	120-124	125 - 129	130 - 134	135 - 139	140 - 144
Number of people	15	14	13	11	7

a) How many qualified for phase two?

b) What is the probability that out of those that qualified for the second phase, the organization will get some who will participate in the district competition.

PART 11

Attempt one item from this part.

ITEM 5

A client at your uncle's workshop has brought an order for baking tins that he wants to use to make a wedding cake, he wants each tin to have a diameter of 24cm at the bottom, 36cm at the top and a height of 28cm. Your uncle asks you to determine the material that will be needed to make one tin so that he can order for the materials from town to make the order.

The client has also just bought a machine that makes ice-cream cones, it makes cones of diameter 9cm but he can adjust the height depending on the volume of ice-cream he wants, he also intends to fill each cone with 63cm³ of ice-cream.

TASK:

(a) Determine the material that will be needed to make one baking tin.

(b) Determine the height of the cone that should be put in the machine.

CamScanner

ITEM 6.

A certain school has organized a trip for the p7 class. The teacher in charge has identified the travel routes that they will take, from school they are to move east for a distance of 120km to a town A where they will spend the night, there after they will turn N50°W and move a distance of 200km to town B for the second night , from town B they are to return to school but he was told that there is a direct route from B to school although he does not know the route, but wants to know if it will help them to save some money on fuel if they use that route or not.

In this school a teacher who teaches a p7 class, is paid UGX. 1,200,000, a housing allowance of UGX. 300,000, utilities allowance of UGX. 100,000 and an off station allowance of UGX. 150,000 for all teachers of p7, the teachers are also required to pay 5% of their gross salary to a social security fund. the school bursar is in hospital but they must be paid their salary for the month before they take the children for the trip, the country's tax rates are as below.

Monthly taxable income	Tax rate %
0 - 300,000	0
300,001 - 600,000	10
600,001 - 900,000	15
900,001 and above	20

TASK:

(a) By use of your mathematical skills which route would you advise them to use if they want to save on fuel costs.

(b) Help the administrator to determine the amount of money he should deposit on each teacher's account.

END