BISHOP NKOYOYO SS-MATALE

S.4 EOT 1 MATHEMATICS

Paper 1

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

- *This paper of **two** sections; **A** and **B**. It has six examination items.*
- *Section **A** has **two** compulsory items.*
- *Section **B** has **two** parts; **I** and **II**. Answer **one** item from each part.*
- *Answer **four** examination items in all.*

Item 1

Your school librarian has bought a bunch of books in two boxes to be put in the carbines of the new library las term. One box contains 48 books of Maths and the other contains 54 books of English. She wants to know how many books to put the carbines so that each carbine has the same number of books and with no book remaining in the boxes. This term, she went back with One million two hundred thousand shillings to restock the library. She used two thirds of the money to buy Physics books, sixty percent of the remainder to buy literature novels and the rest of the money is to be spent on refreshments and transport in the ratio 3:5 respectively. She had budgeted $\boldsymbol{UGX150,000}$ for transport. She doesn't know whether the remaining amount is enough for transport.

Task

(a) (i)Help the librarian know how carbines will be filled by the books. (ii)How many books of each subject will each carbine have?

(b)How much did she spend on refreshments?

(c)Is the remaining amount enough for transport, Justify your answer?

Item 2

Traffic jam at Busia border point has caused lots of accidents and delays in transportation of goods. Mr John has decided to construct a parking yard for saloon cars and pickups only to try decongest the border .he designed mathematical models that resulted into the following constraints;

$$8x + 5y \leq 40, 3x + y \geq 9 \; and \; x < y.$$

He is to charge shs40000 per day for each saloon car and shs25000 per day for every pickup. He would like to know the number of vehicles that can be parked per day so as to get the maximum income. The parking yard is to sit on a rectangular piece of land with a length of 3m longer than the width and the area of this portion is $108m^2$.

Task

Help Mr John to know;

(a) The number of vehicles of each type that should be parked per day to earn the maximum income

(b) Exact dimensions of the parking yard

Item 3

A business man who deals in an agricultural produce business. One day he visited four markets in a certain week.

In market A,he bought 3 bags of beans,5 bags of maize,10 bags of potatoes and 3 bags of millet .In market B,he bought 1 bag of beans,4 bags of potatoes and 2 bags of millet.In market C,he bought 5 bags of beans and 1 bag of maize.In market D,he bought 4 bags of beans,3 bags of maize ,6 bags of potatoes and 1 bag of millet.He bought each bag of beans at ugx 45,000,a bag of maize at ugx 30,000 ,a bag of potatoes at ugx 15,000 and a bag of millet at ugx 50,000.He later sold all the produce he had bought at ugx 50,000 per bag of beans,ugx 35,000 per bag of maize ,ugx 18,000 per bag of potatoes and ugx 55,000 per bag of millet.

Task

Help him to;

(a) (i) determine the total profits obtained from the produce in each market.

(ii) determine the overall profit made in a week?

(b) determine of the four markets, where did he make maximum expenditure and why?

Item4

After the release of pre-registration o level uce results the Dos of your school instructed the heads of departments to make written reports to explain the performance of the 380.who sat for the exams in 2025.The report should show the following;

- Percentages of failures in each subject if the pass mark was 40 for a learner to score an E

- Number of Bs and As if a learner could only score between 70 and 80 and

above 80 respectively.

- the class teacher to restream the class into three streams using mathematics results with the first quartiles as the maximum score for the first stream and upper quartile as minimum score for the learner to be in third stream.

  The heads of department of Mathematics and physics presented a graph showing the performances of their subjects as shown below.

  Task

  (a) Help the head teacher to know the

  (i) percentage of learners who scored failed in each of the subjects

  . (ii) the number of Bs and As each subject got .

  (a)(i) the highest score a learner score to qualify to be in the first stream and third stream

  (ii)number of learners to be in the second stream.

Item5

Pamungu bought a car in January 2017 from his friend at shs. 12,500,000. If the car depreciates at a rate of 10% per annum. Calculate the value of Pamungu's car by January 2020.A Ugandan tourist left Germany for Uganda through Switzerland. While in Switzerland he bought a watch worth 54 Deutsche Marks (Germany currency).

1 Swiss Franc = 1.28 Deutsche Marks

1 Swiss Franc = 1,350 UgandanShillings

A secondary school teacher as a requirement by the government pays PAYE every month according to the tax structure below.

Income (shs) per month	Tax rate(%)
01-50,000	5%
50,001 - 100,000	9.5%
100,001 - 180,000	15%
180,001 - 300,000	18%
300,001 - 400,000	23%
400,001 - 500,000	30% Above 500,000 35%

The teacher earns Shs.760,000 and his allowances include:

Marriage allowance - shs.50,000 per month

Water and electricity - shs.60,000 per month

Housing allowance - shs 150,000 per month

Medical allowance - shs.300,000 per annum

Transport allowance - shs.3,000 per day Paying for insurance and relief - shs.180,000 per annum

Family allowance for only three children. For children in the age bracket 0 to 10 years, shs 12,000 per child, Between 10-15 years shs. 9000 per child 15 years and above shs 5000. Given that the employee has five children, two of whom are aged between 0 and 10, the other two aged between 10 and 15 while the other 18 years. (A month has 30 days)

(a) Find the value of the watch in;

(i) Swiss Francs

(ii) Ugandan Shillings.

(b) Determine the teacher's Net-income

(c) Determine the percentage of his gross income that goes to tax.

Item 6

National Medical Stores (NMS) is a government parastatal mandated to procure, store and distribute essential medicines and medical supplies to all public health facilities in the country. It uses trucks and Lorries to do the distribution. However there is concern about delay of the trucks to return to the parking lot in Wandegeya. On a particular day a lorry and a truck are sent to deliver drugs to Hoima Regional referral hospital and Kiryandongo hospital respectively. They were expected to return to the parking lot in Wandegeya which is exactly half way between Hoima and Kiryandongo. The vehicles drive at a steady speed of **80km/hr** and set off at **3:00 am** from the NMS offices in Entebbe. From the point of setting off the lorry turns in the direction of 060^0 and drives with a steady speed reaching Hoima at **6:00 am**. The lorry sets off from NMS offices and moves Kiryandongo which is 330km the offices in the direction of 200^0. Each spends averagely two and half hours off loading the drugs.

Task:

(a) Help the manager record the time each vehicle is expected to return to the parking lot in Wandegeya.

(b) What is shortest distance between Entebbe and Wandegeya?

(c) In your view how can the health system be improved in your area.

END