KING SOLOMON'S COLLEGE-KYATEGA

BEGINNING OF TERM III S.1 MATHEMATICS

(2 HOURS 15 minutes)

Attempt **all** questions in both **Sections.**

All working, including rough work, must be clearly shown and must be done on the same sheet as the rest of the answer.

Omission of essential working will result in loss of marks.

The intended marks for questions are given in brackets [ ]

SECTION A (30 marks)

1. Solve for x in $52_x = 27$ [04]

2. Tea is made by mixing milk and water. On adding 14 liters of milk, Joan found out that the quantity of milk in the tea is 40% more than that of water. What quantity of tea did Joan prepare? [05]

3. (a) Explain why 99 is not a prime number.
   (b) A number has prime factors 2, 5, and 7. Which is the smallest number that has these prime factors? [04]

4. Noah and Melanie start a marathon at 10:00 AM. They both pick up a drink after 25 minutes. After this initial drink, Noah picks up a new drink every 12 minutes whereas Melanie picks up a new drink every 15 minutes. When do they next both pick up a drink at the same time? [04]

5. To the nearest degree, the hottest temperature ever recorded on earth was $58°C$ in 1922 and the coldest ever recorded was $-89°C$ in 1983. What is the difference between these temperatures? [03]

6. Convert 0.0131313 .... to a fraction [04]

7. Workout without using a calculator [04]

$$\frac{1\frac{4}{5} + \frac{7}{13}}{1 + \left(1\frac{4}{5} \times \frac{7}{13}\right)}$$

8. Is 1672 divisible by 4? Justify your answer **without** directly dividing 1672 by 4. [02]

SECTION B (30 marks)

9. Packaging of goods in factories is usually done in dozens and grosses, which are heavy, expensive/costly and so unfriendly to some customers. Nasike works in the packaging department of PICFARE Industries that manufactures exercise books. She has been given an assignment to design unique and innovative packaging designs for delivery and sales to retail and wholesale outlets.

Resources: **This paper consists of 4 printed pages**
- Knowledge of identifying numbers in different bases
- Knowledge of manipulating numbers in different bases

TASK:

Using your knowledge of number bases, help Nasike by suggesting three unique and innovative packaging designs ideal for customers that would not want to buy books in dozens or grosses. (In each of your suggested designs state   the   base   applied) [10]

10. Stolen mobile phones are sold to unsuspecting buyers. The police traces such phones if they are kept in use. On unsuspecting customer bought a stolen phone and the police search team identified that the holder of the phone was at various locations during different times of the day. The holder was at (76.6, 18), (75.7, 19.6) and (73.3, 20.9) in the morning, midmorning and afternoon respectively, in Kasese.

    SUPPORT
    Use the map extract of Kasese that has been attached at the end.
    Resources:
    - Knowledge of identifying the x and y axes
    - Knowledge of reading points on the Cartesian plane
    - Knowledge of drawing and labelling the Cartesian plane

    TASK:

    You are a police detective who has been assigned to follow up the matter. What should   you   do   to   find   the   stolen   phone? [10]

11. Uganda's population is growing rapidly. In 2002, the population was 24.2 million and it estimated to be 45.7 million in 2020. Uganda has one of the youngest populations in the world and this has come with youth unemployment. Different stakeholders understand the numbers differently. Some prefer the numbers written as fractions, others as decimals, while others as percentages.

SUPPORT

The table below shows projections of Uganda's population statistics (millions) in 2020.

Category	Number of people (millions)	Percentage (%)	Fraction	Decimals
Total population	45.7			
Females		51		
Males			$\dfrac{22}{45}$	
Youth	34			
Rural population			$\dfrac{34}{45}$	
Urban population				0.24
Youth unemployment		2		
Islam		12		
Christianity	38			
Other religions	0.9			

Source: Extract from UBOS© 2020

Resources:

- Knowledge of fractions, percentages and decimals
- Knowledge of calculating a percentage, fraction and decimal of a given quantity.

TASK:

By completing the table, help all the stakeholders to understand the figures. [10]

-END-
"Practice makes mathematics easier"