THE ULTIMATE MATHEMATICS AMBASSADOR 2019

TUMA

7TH EDITION

NOW IN 3 STAGES

(Annual Mathematics Competition)

STAGE 3 - ROUND 1

TIME ALLOWED: 60 minutes

INSTRUCTIONS

1. This Round consists of 4 theory questions.

2. This Round is worth 40 marks.

3. Each question is worth 10 marks.

4. Please ensure that you show all necessary workings before arriving at your final answer.

5. Orderliness, neatness and clarity is encouraged.

INSTRUCTION: *There are **four (4)** questions in this section. Answer all questions, showing all your workings clearly, neatly and orderly.*

1. (a) A solid spherical ball of radius $6cm$ is placed inside an empty plastic box of dimensions $13cm$ by $14cm$ by $15cm$. The box is then filled completely with water. Find the volume (in cm^3) of the water inside the box.

   (b) A rectangular tank measures $2m$ by $5m$ by $4m$. How many *litres* of water can it accommodate?

   (10 marks)

2. A certain man leaves his house in Ikeja to go to work. He covers the first $12km$ in 30 minutes, the next $6km$ at three quarters of that speed, and the last $8km$ at two-thirds of the initial speed.

   (a) Find the total time taken for him to get to work.

   (b) Find the average speed at which he travelled.

   (10 marks)

3. (a) On the first day of the week, a man completed $\frac{3}{8}$ of a job. On the next day, he completed a further $\frac{2}{5}$ of the job. What fraction of the job will be left undone if he completes $\frac{1}{3}$ of the remaining job on the third day of the week?

   (b) It is given that the mode of the scores:

   10, 4, 8, 20, 15, 15, 8, 8, 10, 8, x, 11

   is x. Find the median of the numbers.

   (10 marks)

4. (a) Solve the equation $10.5 - 5x = 2x$

   (b) A customer deposited ₦50 000 for 5 years in a bank which pays $2\frac{1}{2}\%$ interest per year. The bank then lends ₦30 000 out the money to another customer for 3 years at an interest rate of 4% per year. What percentage of the original money invested did the bank lose/gain?

   (10 marks)