

**KIYALA HIGH SCHOOL**  
**MID-TERM TWO ASSESSMENT TEST 2024**  
**PHYSICS**

**S.4**

**Time: 2 Hours**

**INSTRUCTIONS:**

- *This paper consists of four items.*
- *Answer all the items.*

**Item 1**

- a) On certain sunny day, an Uber driver saw a pool of water ahead on a tarmac road as he was driving. To his surprise the pool disappeared as he approached it.

***Task***

As a student of physics, explain the Uber driver surprise.

- b) On reaching Africana hotel, a passenger wanted to use the hotel's swimming pool which appeared shallow but its actual depth was 2.0m

***Task***

As a physicist, explain why the swimming pool appeared shallower than it actually is and explain what would happen to the depth of the pool if water was replaced with paraffin

**Item 2**

Of recent, a tall building being constructed in Kampala near Munyoyo collapsed and took many lives. When the police tasked the contractor to explain the cause of the collapse, he stated that a client did not provide enough money to buy the appropriate materials for constructing the building given that the site is affected by harsh weather conditions, however when the KCCA engineer was tasked to analyse the situation, he reported building near such sites. The young modulus of steel should be about  $2 \times 10^{11} \text{ Nm}^{-2}$ . His statement confused the public the more.

A force of 500N causes an extension of 20mm on an iron bar of length 100cm whose cross sectional area is  $0.05 \text{ cm}^2$

***Task***

As a physics practitioner, you have been tasked by police to produce a report about the scene to help the police carry out the investigation on the contractor.

**Item 3**

A school has a tank which supplies water to students at their dormitory on weekend. The learners observed that as they collect water from the taps, a time comes when the flow of water is very slow.

***Task***

As a student who has studied physics, explain;

- a) The causes of the slow flow of water.
- b) Why the school decided to construct a stand for the tank to produce at least 50,000Pa of water pressure.

**Item 4**

A certain sports team hired a bus to travel for a game. They won the and as they were returning, a traffic officer stopped their bus because of the following offences;

- i) Overloading.
- ii) Over-speeding.
- iii) Standing of players in the moving bus.
- iv) Players seated with unfastened seat belts.
- v) Worn out tires.

***Task***

Write an explanation to the passengers on the likely effects of each of the above offences.

**GOODLUCK**