**535/1**

**PHYSICS**

**Paper 1**

**November 2024**

**1 Hours**

**UGANDA CERTIFICATE OF EDUCATION**

**END OF TERM III EXAMINATIONS 2024**

S.3 PHYSICS

**Paper 1**

**1 Hour 30 Minutes**

**INSTRUCTIONS**

* This paper consists of **three (3)** examination items.
* All the **three** items are compulsory.
* Begin every item on a fresh page.

**Item 1**

A man who stays in an area with a view of the Ocean requested his mother to pay him a visit to Canada. On her arrival at her son’s home, it was noon, but her watch set to Ugandan time read 8:00pm. On looking through the window, she also noticed very high waves in the Ocean which was different from the photos that were always sent to her.

The mother called you to confirm if it was indeed night in Uganda while it was day time in Canada.

**Task:**

As a Physics student, explain to the mother;

1. Why it was night in Uganda and day time in Canada?
2. The cause of the high waves in the sea?
3. How a person in Canada is able to make a phone call in Uganda.

**Item 2**

During a dry season, a school resorted to drawing water from an underground well 8m deep.

Originally, they did it manually by lifting a metallic bucket of mass 4kg and volume 20litres.

The school workers however complained that the bucket was very cold in the morning, very hot in the afternoon when the sun was up. It was also very firming to keep pulling up the bucket manually. They suggested a pulley system of 4 wheels and an efficiency of 80% be used to help them work quicker. None of them could however tell how the pulley works and how much effort would be required to raise the bucket.

Hint;

Acceleration due to gravity =

1 Litre = 1kg.

Use your knowledge of Physics to;

1. Explain what makes the bucket very cold in the morning and hot when the sun is up.
2. Show what the pulley system suggests above looks like and how it works.
3. Determine if a force of 5N will be enough to give the pulley system an efficiency of 80%.
4. Suggest the ways in which the efficiency of the pulley system above can be improved.

**Item 3**

A man set off for a destination of 250km away from his home at 4:00am to be at his work place at 8:00am.

The speed limit on the road is . He set off on the journey without fastening his seat belt and drove at an average speed of for the first 2 hours. He saw a truck that had fallen covering the whole road and stepped on his brakes which brought the car to a sudden stop.

This made him jerk forward almost crushing into his wind screen. The man stopped for 45 minutes and resumed his journey, reaching his work place on time.

He got out of his car and discovered it was very cold so he decided to wear a black sweater which was against the choice of his workmates who said he looked smart in his white shirt. Use your knowledge of Physics to;

1. Determine if the driver exceeded the recommended speed limit.
2. Explain what made the driver jerk forward.
3. Explain to the man’s workmates why he chose a black sweater.

**END**