BLESSED VICTORS SENIOR SCHOOL- BUWALULA

END OF YEAR ASSESSMENT 2024

S2 PHYSICS (Theory)

Time: 2hours

Name:.....

INSTRUCTIONS

*Attempt **all** items in Section **A** and choose only **one** item in section **B**

* Attempt **four (4)** items in all.

SECTION A

(Attempt **all** items in this section)

Item 1.

Otieno who stays in an area with a view of ocean requested his mother to pay him a visit in 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 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

Explain to the mother,

(a) Why it was night in Uganda and daytime in Canada?

(b) the cause of high waves in the sea

(c) the occurrence of seasons

Item 2.

Mikka shaves his beard at the end of each week. He bought a shaver, brush, Shampoo and mirror. His fell down and got destroyed, he wants to buy a new mirror but he is not sure of which type.

Support material

Task

(a) which type of mirror do you think teacher Mikka bought. Explain your reasoning.

(b) Do you think that teacher Mikka's mirror is similar to a car side mirror? Support your answer.

Item 3.

Nakamasu runs a small recycling center in the local market. She collects scrap materials from various sources and sells them to manufacturers for reuse. Recently, she secured a contract to supply metal scraps to a car parts factory. However, the factory requires the metal scraps to be completely free of other materials.Nakamasu's current process involves manually sorting through the scraps, which is time-consuming and labor-intensive. She wants to automate the process to increase efficiency and meet the factory's demands.

Task

(a) Help Nakamasu to create a device which can help her to overcome the challenges.

b) What adjustments could be made to increase its effectiveness?

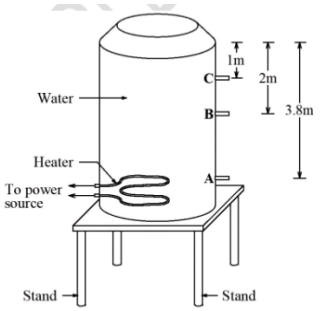
Section B

(Attempt only **one** item from this section)

Item 4.

A certain hotel has its bathrooms situated on the third floor of a building. A boiler on the ground fitted at the lower part of the tank heats water for customers to use. The hotel management does not allow its workers to carry water via the stair case.

Support material



Task

If the radius of the tank is 0.7m, As a physics student,

(a) Explain why the electrical heater was fitted at the lower part of the tank and how eventually all the water gets hot.

(b) Advise the hotel management on how to keep the boiled water hot for along period of time without keeping the boiler on.

(c) Explain to the management how water from the boiler can reach the third floor.

(d) Compare the pressure of water at hole A, B and C if the density of water is 1000kg/m^3

Item 5.

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 20 litres. 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 tiresome to keep pulling up the bucket manually. They suggested a pulley system of 4 wheels and an efficiency of 80% be used to quicken the work.

Hint: 1 litre of water= 1Kg

Task

(a) Explain the changes in temperature of the bucket.

(b) Will a force of 5N produce the required efficiency?

(c) How can the efficiency of the above machine be improved?

Merry Christmas 🎄 and Happy New Year 2025

*****Alex BK4*****