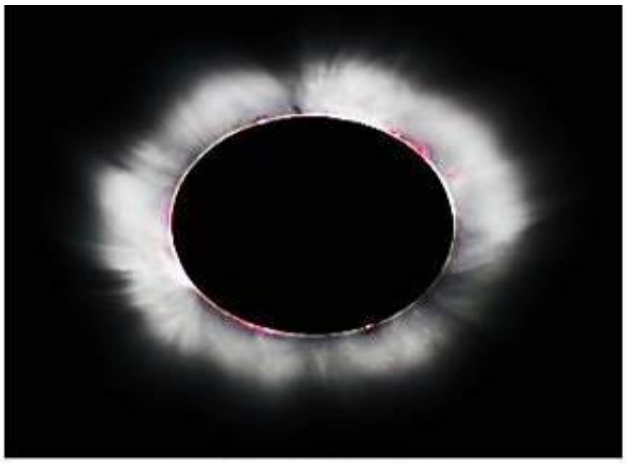
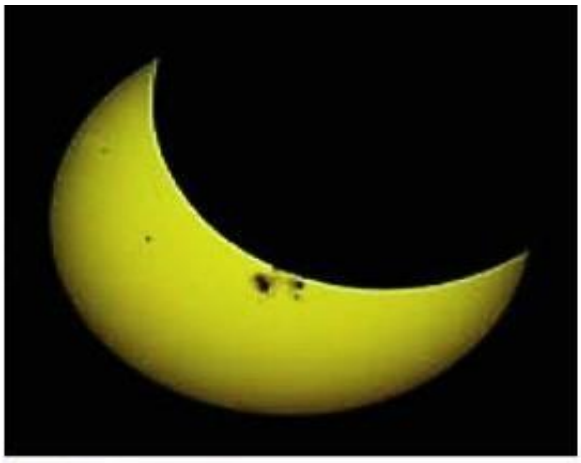
S.3 PHYSICS HOLIDAY WORK

Item 1

A long time ago, solar eclipses were considered as a message from the gods since the people in that age dwelt so much in the spiritual realm than the scientific world. However, with the development of science and technology, eclipses can now easily be explained scientifically instead of spiritually. Whenever eclipses occur, many people gather out in open places to watch the beautiful view of the heavenly bodies as they align themselves in a beautiful display.



(a) Total eclipse



(b)Partial eclipse

However, in most remote areas of Uganda some people still observe the eclipse directly using naked eyes not aware of the risk they are exposing their eyes to in the long run. The science club of your school has taken an initiative to always once in a while go out into the community and teach the community members about scientific facts. This year you are expected to go out during the day an eclipse is expected to occur to. You are expected to organize for the presentation about eclipses.

Task

As a student of physics and science club at the school, you are required to organize for the presentation about eclipses that you will use to address the community members on the day the eclipse is expected to occur. Conclude your presentation by recommending the best safe ways to watch an eclipse. (You may include ray diagram illustrations). ***(20 scores)***

Item 2

Your father wanted to construct the roof of your house.

Task

a) As a physics student, write to your father a statement about what he should consider when constructing the roof of the house and in your statement select the materials for your father to use when constructing the roof.

b) Write a statement to your father about the shape of your roof and why it should have that shape. ***(20 scores)***

Item 3

Ibrahim was driving under a light drizzle towards Jinja at **45 kmh^{-1}**. **2 km** after leaving Mukono town, motorcycle rider suddenly skidded off the road **85 m** in front of the car. Ibrahim immediately applied his brakes but it was a useless move. There was an accident but fortunately enough, no one sustained injuries

Task

a) By simply looking at the car tyre, why did the Police Officers conclude that the car was in bad mechanical condition, yet the car was fairly new as it was only one-year-old? ***(04 scores)***

b) What was the problem between the tyres and the road? ***(04 scores)***

c) What should the tyres have looked like? ***(02 scores)***

d) What should have been the case between the tyres and the road for a car in good mechanical condition**?** ***(05 scores)***

e) From the above scenario, how is friction useful? ***(05 scores)***

Item 4

A uniform metallic rod of length **4.0 m** pivoted at its Centre is used at a children's play resort. If a boy of mass **48 kg** sits **1.5 m** from one end. Another boy of mass **40 kg** wants to seat at a distance of **0.6 m** from the Centre on the other end to balance with the boy at the other end.

Support material

Task

Help the guide at the play resort to direct the learners on how to play the game safely. Also analyze what would happen to the beam if one end of the rod was heated by a considerably hot flame when the boys are off the simple machine so that safety is ensured during plays.

(20 scores)