UGANDA NATIONAL EXAMINATIONS BOARD

Uganda Certificate of Education

PHYSICS S·4

PAPER 1 (Theory)

ACTIVITY OF INTERGRATION

(*Reflection at curved surfaces, refraction, dispersion and colors)*

Time (1:30 minutes)

INSTRUCTIONS TO CANDIDATES: **Atte**mpt all questions

1. The director of a certain school bought two curved mirrors, one to be placed in a bath room and the other to be used in his car as a driving mirror respectively. During packing the two mirrors where placed together and accidentally their labels showing their names and focal length plucked off. The director is confused with his mirrors how to differentiate and use them effectively. As a physics student;

(a) Help the director to differentiate between the two mirrors

(b) Advise him which mirror where by giving reasons for your answer

(c) help him to determine the focal length to be used in the bath room.

(d) After your investigations you realize that the focal length of the mirror to be used in the bath room is 20cm, if your friend placed an object of height 5cm at a distance of 10cm from the mirror in the bath room.

(i) Using a ray diagram locate the position, size and nature of the image formed

(ii) Find the magnification of the image formed

2 (a) john was traveling through a hot desert and so what appeared to be a pool of water in a distance on a tarmac road, however as he walked closer the poll of water disappeared. As a physics student, explain the phenomenon he experienced using an illustration.

(b) Adam is spearfishing in a lake and he spots a fish swimming just below the surface from his position above the water, the fish appears to be at a certain position however, when he thrusts his spear towards the fish he misses. As a physics student,

(i) Explain why he missed the fish using the principals of light refraction

(ii) How he should adjust his aim to successfully catch the fish.

(c) During the theatrical performance a lighting director what to create a purple spot light on the stage. However, He only has red and blue spot lights available.

(i) Explain how the he can achieve the desired color mixing

(ii) Describe what color would result if the director also adds a green spot light to the mix

(d) During a clear evening, Musa observed that the sky is filled with vibrant red and orange hues at sun set. Explain how the dispersion of light in the atmosphere leads to the observed colors.

(e) Alight ray passes from air (with refractive index 1.00) in to a glass block (with refractive index 1.50) at an angle of incidence 30^0.calculate the angle of refraction inside the glass block.

END