

1.
 - (a) Describe the nature of the image formed by a pinhole camera.
 - (b) What would be the effect on the image formed by a pinhole camera when the object distance is increased?
 - (c) Calculate the height of a tree 300m away from a pinhole camera which produces an image 2.5cm high given the length of a camera is 20cm.
2.
 - (a) State the laws of reflection.
 - (b) Draw ray diagrams to locate the image(s) formed by;
 - (i) A plane inclined at 180° .
 - (ii) Two plane mirrors inclined at 90° .
3.
 - (a) State three effects that demonstrate that light travels in a straight line.
 - (b) Illustrate using a ray diagram how:
 - (i) a small light source produces a shadow.
 - (ii) an extended light source produces a shadow.
4.
 - (a) Explain an annular eclipse as a special form of solar eclipse.
 - (b) Describe, with a suitable labelled diagram the formation of :
 - (i) Total solar eclipse.
 - (ii) Lunar eclipse.
5. Explain the meaning of the following terms:
 - (a) Natural and artificial sources of light.
 - (b) A non-luminous object.
 - (c) A ray and a beam of light.
 - (d) A shadow.
 - (e) A pinhole camera.

6.
 - (a) State four characteristics of images formed by a plane mirror.
 - (b) Explain the meaning of the following terms as applied to light.
 - (i) Lateral inversion.
 - (ii) Virtual image.
 - (iii) Real image.
 - (c) At what angle are the two mirrors inclined when the number of images formed is 8.
7. A tree 28 m away from a pinhole camera gives rise to an image 2 cm high on the screen. If the distance between the pinhole and the screen is 4 cm, calculate the height of the tree.
8. A girl 140 cm tall whose eye level is 120 cm above the ground looks at her image in a vertical plane mirror. Find the minimum height of the mirror if the girl is to be able to see the whole of herself.
9.
 - (a) State the laws of reflection.
 - (b) Describe a simple experiment to prove that the angle of incidence is equal to the angle of reflection.
10. A pinhole camera forms an image of size 10 cm. The object is 5 m tall and 10 m away from the pinhole. Calculate the length of the pinhole camera.

END