HOLIDAY HOMEWORK(2018-19)

CLASS X

PHYSICS

1. An object is placed 20cm in front of a plane mirror. The mirror is moved 2cm towards the object. What is the distance between the positions of the original and final images seen in the mirror?

2. A ray of light strikes a plane mirror PQ at an angle of incidence 30^0, is reflected from the plane mirror and then strikes a second plane mirror QR placed at right angles to the first mirror. What will be the angle of reflection at the second mirror? (Draw ray diagram to support your answer)

3. Draw ray diagrams to show the formation of images when the object is placed in front of a converging mirror: (i) between pole and focus   (ii) between its centre of curvature and focus.

4. At what distance from a concave mirror of focal length 10cm should an object be placed so that   (i) its real image is formed 20cm from the mirror   (ii) its virtual image is formed 20cm from the mirror.

5. What happens to the image when the object is moved away from a convex mirror, gradually? Draw ray diagrams to show this.

6.

The diagram shows a dish antenna which is used to receive television signals from a satellite. The antenna (signal detector) is fixed in front of the curved dish.

(a) What is the purpose of the dish?

(b) Should it be concave or convex?

(c) Where should the antenna be positioned to receive the strongest possible signals?

(d) Explain what change you would expect in the signals if a large dish was used?

7. Give two uses of a convex mirror. Explain why you would choose convex mirror for these uses.

8. An object placed 20cm in front of a mirror is found to have an image 15cm (a) in front of it, (b) behind the mirror. Find the focal length of the mirror and the kind of mirror in each case.

9. A man holds a spherical shaving mirror of radius of curvature 60cm and focal length 30cm, at a distance of 15cm from his nose. Find the position of image, and calculate the magnification.

10. What is the nature of the image formed by a concave mirror if the magnification produced by the mirror is +3?