SINEWAVE COMPETITION CLASSES.....

CLASS X

SCIENCE

TOPIC:- NUMERICALS(REFLECTION N REFRACTION)

1) The refractive index of water is 1.22 and the speed of light in air is 3x10 m/s. Calculate the speed of light in water.
2) The refractive index of glass is 1.50 and the speed of light is 3x10 m/s, Calculate the speed of light in glass.
3) An object is placed at a distance of 12 cm in front of a concave mirror. It forms a real image four times larger than the object. Calculate the distance of the image from the mirror.
4) A convex lens has focal length of 50 cm. Calculate its power.
5) Two thin lenses of power 3.5 D and -2.5 D are placed in contact.Find the power and focal legth of the lens combination.
6) A convex mirror used on an automobile has a focal length of 3 m. If a vehicle behind is at a distance of 5 m, find the location of the image?
7) What is the distance between the image and plane mirror , if the object is at 15 cm from mirror?
8) A concave mirror of focal length 1.5 m forms a real image of an object at distance of 40 cm. Find the position of the image?
9) Find the focal length of a lens of power -2 D. What type of lens is this?
10) How is power related to focal length? Find the power of concave lens of focal length 50 cm.
11) At what distance should an object be placed from a convex lens of focal length 18 cm to obtain an image at 24 cm.
12) Two lenses of power +2 D and -4D. What is the nature and focal length of each lens?
13) A 5 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm.The distance of the object from the lens is 30 cm. Calculate the position and the size of the image formed.
14) A concave lens has focal length of 20 cm. At what distance from the lens a 5 cm tall object be placed so that it forms an image at 15 cm from the lens? Also calculate the size of image formed.
15) A concave lens of focal length 15 cm , forms an image 10 cm from the lens. How far is the object placed from the lens? Draw a diagram also.
16) A convex lens of focal length 20 cm can produce a magnified virtual image as well as real image. Is this a correct statement? If yes, where shall be the object placed in each case for obtaining these images?
17) Find out how far should an object be placed from a convex lens of focal length 20 cm to obtain its image on screen kept 30 cm away from the lens. Find the height of the image if the height of the object is 6 cm.

18) How far should an object be placed from a convex lens of focal length 20 cm to obtain its image at a distance of 30 cm from the lens? What will be the height of the image if the object is 6 cm tall?
19) You are given kerosene, turpentine and water . In which of these does the light travel fastest? Give refractive indices of kerosene , turpentine and water are 1.44 , 1.47 and 1.33 respectively.
20) A concave mirror produces three times magnified real image of an object placed at 10 cm in front of it.Where is the image located?
21) Magnification produced by a concave mirror of a body 4 cm in size is 0.16. What is the size of image?
22) The speed of light in a transparent medium is 0.6 times that of its speed in vaccum. What is the refractive index of the medium?
23) The outer surface of a hollow sphere of aluminium of radius 50 cm is to be used as a mirror. What will be the focal length of this mirror? Which type of spherical mirror will it provide?

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