

Board – ICSE

Class – 7th

Topic – light energy

Q1. Match the following

(a). A light ray passes from air to glass	(1) . speeds up
(b). A light ray passes from glass to water	(2). reflects red light
(c). Virtual image	(3). primary colours
(d). Red rose	(4). plane mirror
(e). Red, green, and blue	(5). slows down

SOLUTION

(a). A light ray passes from air to glass	(5). slows down
(b). A light ray passes from glass to water	(1) . speeds up
(c). Virtual image	(4). plane mirror
(d). Red rose	(2). reflects red light
(e). Red, green, and blue	(3). primary colours

Q2. How do we see objects around us ?

SOLUTION

Objects are seen when light after striking them, returns in the same medium and reach our eyes.

Q3. State two uses of a plane mirror.

SOLUTION

It is used as :

- (i) Looking glass
- (ii) In periscopes.

Q4. Can light travel in vacuum ?

SOLUTION

Yes, light can travels in vacuum or air, a distance of nearly 299, 792, 458 metre (or nearly 3×10^8 metre) in one second. Thus, the speed of light in vacuum (or air) is $3 \times 10^8 \text{ m s}^{-1}$ nearly.

Q5. State the speed of light in (a) air, (b) glass.

SOLUTION

- (a) Air — 3×10^8
- (b) Glass — 2×10^8

Q6. State whether light slows down or speeds up in the following cases :

Light going from air to glass.

SOLUTION

Slows down

Q7. State whether light slows down or speeds up in the following cases :

Light going from glass to water.

SOLUTION

Speeds up

Q8. What are the primary colours ? Name the three primary colours.

SOLUTION

Primary colours are the colours of light by mixing which white light is obtained. They are : (i) red (ii) green and (iii) blue.

Red + Green + Blue = White

Q9. What are the secondary colours ? Name the three secondary colours.

SOLUTION

Secondary colours are the colours of light which are obtained by mixing the two primary colours. They are (i) yellow, (ii) cyan, and (iii) magenta.

Q10. The leaves appear green when seen in white light. Give a reason.

SOLUTION

Leaves appear green in white light because they reflect only the green light and absorb the light of all the other colours.

Q11. A rose appears red in white light. How will it appear in green light? Give a reason for your answer.

SOLUTION

If a red rose is seen in green light, it appears black. The reason is that the rose absorbs the green light falling on it and reflect none.

Q12. Why does a piece of paper appear white in sunlight ? How would you expect it to appear when viewed in red light?

SOLUTION

A piece of paper appears white in sunlight because it reflects light of all the colours. It would appear red when viewed in red light

Q13. A piece of paper appears black in sunlight. What will be its colour when seen in red light ?

SOLUTION

A piece of paper appear black in sunlight. It would appear black when seen in red light because it absorbs light of all the colours.

Q14. A rose appears red in white light. How will it appear in red light?

Give a reason for your answer.

SOLUTION

If a red rose is seen in red light, it appears bright red. This is because the rose reflects the red light falling on it and absorbs none of it.

Q15. Fill in the blank with the appropriate color

Red + Blue + _____ = White

SOLUTION

Red + Blue + Green = White

Q16. Fill in the blank with the appropriate colour

Red + Blue = _____

SOLUTION

Red + Blue = Magenta

Q17. Fill in the blank with the appropriate colour

Green + Red = _____

SOLUTION

Green + Red = Yellow

Q18. State the two laws of reflection of light.

SOLUTION

Laws of reflection -

- (i) The incident ray, normal and the reflected ray all lie in the same plane.
- (ii) The angle of incidence is equal to the angle of reflection.

Q19. A ray of light falls normally on a plane mirror. What is the angle of incidence ?

SOLUTION

Angle of incidence is 0° . Since angle of incidence is the angle between incident ray and normal. Direction of reflected ray is along BA opposite to the direction of incident ray.

Q20. State in words, how do you find the location of image of an object formed by a plane mirror.

SOLUTION

The location of image of a point object is as far behind the mirror as the object is in front of it