

8th Science Lesson 3 Questions in English

3] Light

1. The radiant sky in the morning being filled with_____ colour.

- a) Reddish
- b) **Golden red**
- c) White
- d) Orange

Explanation

Lofty mountains covered with greenish vegetation, magnificent trees reaching up to the clouds, beautiful streams drifting down the valleys, bluish sea water roaring towards the coast and **the radiant sky in the morning being filled with golden red colour**, all give delight to our eyes and peace to our mind.

2. Which of the following is not an optical instrument?

- a) Periscope
- b) Kaleidoscope
- c) **Stethoscope**
- d) Lens

Explanation

Light is a form of energy and it travels in a straight line. You will also study about the laws of reflection and the laws of refraction and some of the **optical instruments**, such as **periscope** and **kaleidoscope**, which work on these principles.

3. Which of the following statement is correct?

- 1) We use mirrors in our daily life for various purposes.
 - 2) The mirror is an optical device with a polished surface that reflects the light falling on it
 - 3) They are also used in scientific apparatus, like telescope
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) **All the above**

Explanation

We use mirrors in our daily life for various purposes. We use them for decoration. In vehicles, they are used as rear-view mirrors. They are also **used in scientific apparatus, like telescope**. The mirror is an **optical device with a polished surface** that **reflects the light falling on it**.

4. Which of the following metal can be used to coated for forming a typical mirror?

- 1) Silver
 - 2) Mercury
 - 3) Aluminium
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

A **typical mirror** is a glass sheet coated with **aluminium or silver** on one of its sides to produce an image.

5. Which of the following are mirrors are with curved surfaces?

- 1) Parabolic
 - 2) Ellipsoid
 - 3) Spherical
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Mirrors have a plane or curved surface. **Curved mirrors** have surfaces that are **spherical, cylindrical, parabolic and ellipsoid**.

6. Which of the following statement is correct?

- 1) The shape of a mirror determines the type of image it forms
 - 2) Plane mirrors form the perfect image of an object
 - 3) Curved mirrors produce images that are always enlarged
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

The shape of a mirror determines the type of image it forms. Plane mirrors form the perfect image of an object. Whereas, **curved mirrors produce images that are either enlarged or diminished**.

7. Which of the following statement about Spherical mirror is correct?

- 1) One side of this mirror is silvered and the reflection of light occurs at the other side
- 2) It resembles the shape of a piece cut out from a spherical surface.
- 3) Spherical mirrors are one form of curved mirrors
 - a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Spherical mirrors are **one form of curved mirrors**. If the curved mirror is a part of a sphere, then it is called a 'spherical mirror'. It **resembles the shape of a piece cut out from a spherical surface**. **One side of this mirror is silvered and the reflection of light occurs at the other side.**

8. Which of the following statement about concave mirror is correct?

- 1) A spherical mirror, in which the reflection of light occurs at its concave surface, is called a concave mirror
- 2) It diminishes object placed close to them
- 3) The most common example of a concave mirror is the make-up mirror
 - a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

A spherical mirror, in which the reflection of light occurs at its concave surface, is called a concave mirror. These **mirrors magnify the object placed close to them**. The **most common example of a concave mirror is the make-up mirror**.

9. Which of the following statement is correct?

- 1) A spherical mirror, in which the reflection of light occurs at its convex surface, is called a convex mirror
- 2) The image formed by these mirrors is smaller than the object
- 3) Most common convex mirrors are rear viewing mirrors used in vehicles
 - a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

A spherical mirror, in which the reflection of light occurs at its convex surface, is called a convex mirror. The **image formed by these mirrors is smaller than the object**. Most common convex mirrors are rear viewing mirrors used in vehicles.

10. In which of the following mirror the below safety warning is labelled:

'Objects in the mirror are closer than they appear'

- a) Concave
- b) Convex**
- c) Plane
- d) None

Explanation

Convex mirrors used in vehicles as **rear-view mirrors** are labelled with the safety warning: 'Objects in the mirror are closer than they appear' to warn the drivers. This is because inside the mirrors, vehicles will appear to be coming at a long distance.

11. Assertion(A): A parabolic mirror has a concave reflecting surface

Reason(R): Its surface directs the entire incident beam of light to converge at its focal point.

- a) Both (A) and (R) are correct, but (R) does not explain (A)
- b) Both (A) and (R) are wrong
- c) Both (A) and (R) are correct and (R) explains (A)**
- d) (A) is Correct and (R) is wrong

Explanation

A **parabolic mirror** is one type of curved mirror, which is in the shape of a parabola. It has a **concave reflecting surface** and this surface directs the entire incident beam of light to converge at its focal point.

12. Assertion(A): The light rays reflected by parabolic mirror travel a long distance, without getting Diminished.

Reason(R): Light rays generated by the source placed at this focal point will fall on this surface and they will be diverged in a direction, which is parallel to the principal axis of the parabolic mirror

- a) Both (A) and (R) are correct, but (R) does not explain (A)
- b) Both (A) and (R) are wrong
- c) Both (A) and (R) are correct and (R) explains (A)**

d) (A) is Correct and (R) is wrong

Explanation

In the same way, light rays generated by the source placed at this focal point will fall on this surface and they will be diverged in a direction, which is parallel to the principal axis of the parabolic mirror. Hence, the light rays will be reflected to travel a long distance, without getting diminished.

13. Which of the following can be collected or projected using Parabolic reflectors?

- a) Sound
- b) Radio waves
- c) Heat
- d) **All the above**

Explanation

Parabolic mirrors, also known as parabolic reflectors, **are used to collect or project energy** such as **light, heat, sound and radio waves**.

14. Which of the following uses Parabolic reflectors?

- 1) Parabolic Telescope
 - 2) Reflecting Telescope
 - 3) Solar cooker
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) **All the above**

Explanation

Parabolic mirrors, also known as **parabolic reflectors**, used in **reflecting telescopes, radio telescopes and parabolic microphones**. They are also used in **solar cookers and solar water heaters**.

15. The first parabolic mirrors were constructed by_____

- a) **Heinrich Hertz**
- b) Robert brown
- c) Newton
- d) Galileo

Explanation

The principle behind the working of a parabolic mirror has been known since the Greco-Roman times. The **first parabolic mirrors were constructed by Heinrich Hertz**, a German physicist, in the form of reflector antennae in the year 1888.

16. _____ is the centre of the sphere from which the mirror is made

- a) Focal point
- b) Radius of curvature
- c) **Centre of curvature**
- d) Principle axis

Explanation

Centre of Curvature is the centre of the sphere from which the mirror is made. It is denoted by the letter C in the ray diagrams. A ray diagram represents the formation of an image by the spherical mirror.

17. _____ is the geometric centre of the spherical mirror

- a) **Pole**
- b) Centre of curvature
- c) Principle axis
- d) Focus

Explanation

Pole is the geometric centre of the spherical mirror. It is denoted by the letter P. When a beam of light is incident on a spherical mirror, the reflected rays converge (concave mirror) at or appear to diverge from (convex mirror) a point on the principal axis. This point is called the 'focus' or 'principal focus'. It is also known as the focal point. It is denoted by the letter F in ray diagrams.

18. The line joining the pole of the mirror and its centre of curvature is called _____

- a) Radius of Curvature
- b) Centre of curvature
- c) **Principle axis**
- d) Focus

Explanation

The line joining the pole of the mirror and its centre of curvature is called principal axis. Pole is the geometric centre of the spherical mirror. It is denoted by the letter P.

19. _____ is the distance between the centre of the sphere and the vertex.

- a) **Radius of Curvature**
- b) Centre of curvature
- c) Principle axis
- d) Focus

Explanation

Radius of Curvature is the **distance between the centre of the sphere and the vertex**. It is shown by the letter R in ray diagrams. (The vertex is the point on the mirror's surface where the principal axis meets the mirror. It is also called as 'pole'.)

20. The distance between the pole and the principal focus is called_____

- a) Pole
- b) Centre of curvature
- c) Principle axis
- d) **Focal length**

Explanation

The **distance between the pole and the principal focus is called focal length (f) of a spherical mirror**. There is a relation between the focal length of a spherical mirror and its radius of curvature. The focal length is half of the radius of curvature.

21. The radius of curvature of a spherical mirror is 20 cm. Find its focal length.

- a) **10 cm**
- b) 1 cm
- c) 5 cm
- d) 10 mm

Explanation

The radius of curvature of a spherical mirror is 20 cm. Find its focal length.

Solution:

Radius of curvature = 20 cm

$$\begin{aligned}\text{Focal length (f)} &= \frac{\text{Radius of curvature}}{2} \\ &= \frac{R}{2} = \frac{20}{2} = 10 \text{ cm}\end{aligned}$$

22. Focal length of a spherical mirror is 7 cm. What is its radius of curvature?

- a) **14 cm**
- b) 21 cm
- c) 12 cm
- d) 18 cm

Explanation

Focal length of a spherical mirror is 7 cm. What is its radius of curvature?

Solution:

Focal length = 7 cm

Radius of curvature (R) = $2 \times$ focal length
 $= 2 \times 7 = 14$ cm

23. Which of the following statement is correct?

- 1) Images formed by spherical mirrors are of two types
 - 2) Real images can be formed on a screen
 - 3) Virtual images cannot be formed on a screen
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Images formed by spherical mirrors are of two types: i) real image and ii) virtual image. **Real images** can be formed **on a screen**, while **virtual images** cannot be formed **on a screen**.

24. Image formed by a convex mirror is_____

- 1) Erect
 - 2) Real
 - 3) Virtual
 - 4) Diminished
- a) 1, 2, 4
 - b) 2, 3, 4
 - c) 1, 3, 4
 - d) All the above

Explanation

Image formed by a convex mirror is always **erect, virtual and diminished in size**. As a result, images formed by these mirrors cannot be projected on a screen.

25. Assertion(A): As the object gets closer to a concave mirror, the image gets larger

Reason(R): The characteristics of an image are determined by the location of the object

- a) Both (A) and (R) are correct, but (R) does not explain (A)
- b) Both (A) and (R) are wrong

c) Both (A) and (R) are correct and (R) explains (A)

d) (A) is Correct and (R) is wrong

Explanation

The characteristics of an image are determined by the location of the object. As the object gets closer to a concave mirror, the image gets larger, until attaining approximately the size of the object, when it reaches the centre of curvature of the mirror.

26. Which of the following statement is incorrect?

- 1) Concave mirrors form a real image and it can be caught on a screen.
- 2) Depending on the position of the object in front of the mirror, the position, size and nature of the image will vary
 - a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation

Concave mirrors form a real image and it can be caught on a screen. Unlike convex mirrors, concave mirrors show different image types. Depending on the position of the object in front of the mirror, the position, size and nature of the image will vary

27. In case of convex mirror, when the object is at infinity, image size is_____

- a) Diminished
- b) Highly diminished
- c) Magnified
- d) Highly magnified

Explanation

POSITION OF THE OBJECT	POSITION OF THE IMAGE	IMAGE SIZE	NATURE OF THE IMAGE
At infinity	At F	Highly diminished, point sized	Virtual and erect
Between infinity and the pole (P)	Between P and F	Diminished	Virtual and erect

28. Match the image size with the position of the object in the case of concave mirror:

- | | |
|----------------------|----------------------------|
| I. At infinity | 1. Highly magnified |
| II. At C | 2. Highly diminished |
| III. Between C and F | 3. Same size as the object |
| IV. At F | 4. Magnified |
- a) 1, 2, 4, 3
 b) 2, 1, 4, 3
 c) **2, 3, 4, 1**
 d) 4, 1, 2, 3

Explanation

POSITION OF THE OBJECT	POSITION OF THE IMAGE	IMAGE SIZE	NATURE OF THE IMAGE
At infinity	At F	Highly diminished	Real and inverted
Beyond C	Between C and F	Diminished	Real and inverted
At C	At C	Same size as the object	Real and inverted
Between C and F	Beyond C	Magnified	Real and inverted
At F	At infinity	Highly magnified	Real and inverted
Between F and P	Behind the mirror	Magnified	Virtual and erect

29. Which of the following is not an application of Concave mirror?

- a) Concave mirrors are used while applying make-up or shaving, as they provide a magnified image
 b) They are also used in reflecting telescopes
 c) They can collect the light from a larger area and focus it into a small spot
 d) **They are used in vehicles as rear-view mirrors**

Explanation**Applications Of Concave Mirrors:**

- Concave mirrors are used while applying make-up or shaving, as they provide a magnified image.
- They are used in torches, search lights and head lights as they direct the light to a long distance.
- They can collect the light from a larger area and focus it into a small spot. Hence, they are used in solar cookers.
- They are used as head mirrors by doctors to examine the eye, ear and throat as they provide a shadow-free illumination of the organ.
- They are also used in reflecting telescopes

30. Which of the following statement is correct?

- 1) Not all the objects can produce the same effect as produced by the plane mirror
- 2) Light, falling on a body having a shiny, polished and smooth surface alone is bounced back.
- 3) This bouncing back of the light rays as they fall on the smooth, shiny and polished surface is called reflection.
 - a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Not all the objects can produce the same effect as produced by the plane mirror. **A ray of light, falling on a body having a shiny, polished and smooth surface alone is bounced back.** This bouncing back of the light rays as they fall on the smooth, shiny and polished surface is called reflection.

31. Which of the following statement is correct?

- 1) Reflection involves two rays: i) incident ray and ii) reflected ray
- 2) An imaginary line perpendicular to the reflecting surface, at the point of incidence of the light ray, is called the normal.
 - a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation

Reflection involves two rays: i) incident ray and ii) reflected ray. The incident ray is the light ray in a medium falling on the shiny surface of a reflecting body. After falling on the surface, this ray returns into the same medium. This ray is called the reflected ray. **An imaginary line perpendicular to the reflecting surface, at the point of incidence of the light ray, is called the normal.**

32. Which of the following rays are involved in law of reflection?

- 1) Incident ray
- 2) Reflected ray
- 3) Normal ray
 - a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

The relation between the incident ray, the reflected ray and the normal is given as the law of reflection. The laws of reflection are as follows:

- The incident ray, the reflected ray and the normal at the point of incidence, all lie in the same plane.
- The angle of incidence and the angle of reflection are always equal.

33. _____ metal is the best reflector of light

- a) Mercury
- b) **Silver**
- c) Aluminium
- d) Tungsten

Explanation

Silver metal is the best reflector of light. That's why a thin layer of silver is deposited on the side of materials like plane glass sheets, to make mirrors.

34. Which of the following statement is incorrect?

- 1) The amount of reflection depends on the nature of the reflecting surface of a body
- 2) Based on the nature of the surface, reflection can be classified as regular and irregular reflection
 - a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) **None**

Explanation

You have learnt that not all bodies can reflect light rays. The amount of reflection depends on the nature of the reflecting surface of a body. Based on the nature of the surface, reflection can be classified into two types namely, i) **regular reflection** and ii) **irregular reflection**.

35. Which of the following reflection is regular reflection?

- 1) Reflection of light by a plane mirror
- 2) Reflection of light from the surface of still water
- 3) Reflection of light from a wall
 - a) **1, 2**
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

When a beam of light (collection of parallel rays) falls on a smooth surface, it gets reflected. After reflection, the reflected rays will be parallel to each other. Here, the angle of incidence and the angle of reflection of each ray will be equal. Hence, the law of reflection is obeyed in this case and thus a clear image is formed. This reflection is called 'regular reflection' or 'specular reflection'. Example: Reflection of light by a plane mirror and reflection of light from the surface of still water

36. Which of the following statement about irregular reflection is correct?

- 1) In the case of a body having a rough or irregular surface, each region of the surface is inclined at different angles
 - 2) Reflection of light from a wall is irregular reflection
 - 3) Irregular reflection is also known as diffused reflection
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

In the case of a body having a rough or irregular surface, each region of the surface is inclined at different angles. When light falls on such a surface, the light rays are reflected at different angles. In this case, the angle of incidence and the angle of reflection of each ray are not equal. Hence, the **law of reflection is not obeyed in this case and thus the image is not clear. Such a reflection is called 'irregular reflection' or 'diffused reflection'. Example: Reflection of light from a wall.**

37. The number of images formed, depends on_____

- a) Centre of curvature
- b) Radius of curvature
- c) **Angle of inclination**
- d) Focal length

Explanation

The number of images formed, depends on the angle of inclination of the mirrors. If the angle between the two mirrors is a factor of 360° , then the total number of reflections is finite. If θ (Theta) is the angle of inclination of the plane mirrors, the number of images formed = $360^\circ / \theta - 1$. As you decrease this angle, the number of images formed increases. When they are parallel to each other, the number of images formed becomes infinite.

38. If two plane mirrors are inclined to each other at an angle of 90° , find number of images formed

- a) 4
- b) 2
- c) 3

d) 5

Explanation

If two plane mirrors are inclined to each other at an angle of 90° , find the number of images formed.

Solution:

Angle of inclination = 90°

Number of images formed =

$$\frac{360^\circ}{\theta} - 1 = \frac{360^\circ}{90^\circ} - 1 = 4 - 1 = 3$$

39. _____ principle is used in Kaleidoscope

- a) Refraction
- b) **Reflection**
- c) Scattering
- d) All the above

Explanation

Kaleidoscope is a device, which functions on the **principle of multiple reflection of light**, to produce numerous patterns of images. It has two or more mirrors inclined with each other.

40. Which of the following statement is correct?

- 1) Periscope is an instrument used for viewing bodies or ships, which are over and around another body or a submarine.
 - 2) It is based on the principle of the law of reflection of light.
 - 3) It consists of a long outer case and inside this case mirrors or prisms are kept at each end, inclined at an angle of 60°
- a) **1, 2**
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Periscope is an instrument used for viewing bodies or ships, which are over and around another body or a submarine. It is based on the **principle of the law of reflection of light**. It consists of a long outer case and inside this case mirrors or prisms are kept at each end, **inclined at an angle of 45°** . Light coming from the distant body, falls on the mirror at the top end of the periscope and gets reflected vertically downward.

41. Which of the following are the uses of Periscope?

- 1) It is used in warfare and navigation of the submarine.
- 2) Photographs of important places can be taken through periscopes without trespassing restricted military regions.
- 3) Fibre optic periscopes are used by doctors as endoscopes to view internal organs of the body.
 - a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Uses of Periscope:

- It is **used in warfare and navigation of the submarine.**
- In military it is used for pointing and firing guns from a 'bunker'
- **Photographs of important places** can be taken through periscopes **without trespassing restricted military regions.**
- **Fibre optic periscopes are used by doctors as endoscopes to view internal organs of the body**

42. Which of the following statement is incorrect?

- 1) When it falls on a transparent material, it is not reflected completely, but a part of it is reflected and a part of it is absorbed and most of the light passes through it
- 2) Th rough air, light travels with a speed of $3 \times 10^8 \text{ m s}^{-1}$, but it cannot travel with the same speed in water or glass
 - a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation

We know that when a light ray falls on a polished surface placed in air, it is reflected into the air itself. When it falls on a transparent material, it is not reflected completely, but a part of it is reflected and a part of it is absorbed and most of the light passes through it. Th rough air, light travels with a speed of $3 \times 10^8 \text{ m s}^{-1}$, but it cannot travel with the same speed in water or glass, because, optically denser medium such as water and glass off er some resistance to the light rays.

43. Which of the following is lesser medium?

- a) Water
- b) Crystal
- c) Air

d) None

Explanation

Light rays actually travel from the water (a denser medium) into the air (a rarer medium). As you saw earlier, when a light ray travels from a denser medium to a rarer medium, it is deviated from its straight-line path. So, the pencil appears to be bent when you see it through the glass of water.

44. Which of the following statement is correct?

- 1) Refraction of light in a medium depends on the speed of light in that medium.
 - 2) When the speed of light in a medium is more, the bending is more
 - 3) When the speed of light is less, the bending is less
- a) 1 alone
 - b) 2 alone
 - c) 2, 3
 - d) All the above

Explanation

Refraction of light in a medium depends on the speed of light in that medium. When the speed of light in a medium is more, the bending is less and when the speed of light is less, the bending is more.

45. The amount of refraction of light in a medium is denoted by a term known as_____

- a) Refraction
- b) **Refractive index of medium**
- c) Reflective index of medium
- d) Scattering index of medium

Explanation

The **amount of refraction of light in a medium is denoted by a term known as refractive index of the medium**, which is the ratio of the speed of light in the air to the speed of light in that particular medium.

46. Refractive index =

- 1) Speed of light in air
 - 2) Speed of light in the medium
 - 3) Speed of light in vacuum
- a) $\frac{1}{2}$
 - b) $\frac{1}{3}$
 - c) $\frac{2}{3}$
 - d) $\frac{2}{1}$

Explanation

Refractive index, μ is given by

$$\mu = \frac{\text{Speed of light in air (c)}}{\text{Speed of light in the medium (v)}}$$

47. Match the following with their refractive index:

- | | | |
|------|----------|---------|
| I. | Air | 1. 1.56 |
| II. | Kerosene | 2. 1 |
| III. | Quartz | 3. 1.41 |
| IV. | Diamond | 4. 2.41 |
- a) 2, 1, 4, 3
b) **2, 3, 1, 4**
c) 2, 1, 3, 4
d) 3, 1, 2, 4

Explanation

SUBSTANCES	REFRACTIVE INDEX
Air	1.0
Water	1.33
Ether	1.36
Kerosene	1.41
Ordinary Glass	1.5
Quartz	1.56
Diamond	2.41

48. What is the unit of refractive index?

- a) m
b) second
c) hertz
d) **no unit**

Explanation

Refractive index is a ratio of two similar quantities (speed) and so, **it has no unit**. Since, the speed of light in any medium is less than its speed in air, refractive index of any transparent medium is always greater than 1.

49. Speed of light in air is $3 \times 10^8 \text{ m s}^{-1}$ and the speed of light in a medium is $2 \times 10^8 \text{ ms}^{-1}$. Find the refractive index of the medium with respect to air.

- a) 1
- b) 1.5
- c) 2
- d) 2.4

Explanation

Speed of light in air is $3 \times 10^8 \text{ m s}^{-1}$ and the speed of light in a medium is $2 \times 10^8 \text{ ms}^{-1}$. Find the refractive index of the medium with respect to air.

Solution:

$$\text{Refractive index } (\mu) = \frac{\text{Speed of light in air } (c)}{\text{Speed of light in the medium } (v)}$$

$$\mu = \frac{3 \times 10^8}{2 \times 10^8} = 1.5$$

50. Refractive index of water is $4/3$ and the refractive index of glass is $3/2$. Find the refractive index of glass with respect to the refractive index of water.

- a) 1.15
- b) 1.125
- c) 1.25
- d) 2.25

Explanation

Refractive index of water is $4/3$ and the refractive index of glass is $3/2$. Find the refractive index of glass with respect to the refractive index of water.

Solution:

$${}_w\mu_g = \frac{\text{Refractive index of glass}}{\text{Refractive index of water}} = \frac{\frac{3}{2}}{\frac{4}{3}} = \frac{9}{8} = 1.125$$

51. Refraction of light obeys_____

- a) Henely's law
- b) Roberst law

- c) **Snell's law**
- d) None

Explanation

Refraction of light rays, as they travel from one medium to another medium, obeys two laws, which are known as Snell's laws of refraction. They are:

- I) The incident ray, the refracted ray and the normal at the point of intersection, all lie in the same plane.
- II) The ratio of the sine of the angle of incidence (i) to the sine of the angle of refraction (r) is equal to the refractive index of the medium, which is a constant.

$$\frac{\sin i}{\sin r} = \mu$$

52. Which of the following statement is correct?

- 1) White light consists of Six colours.
- 2) Splitting of white light into its seven constituent colours (wavelength), on passing through a transparent medium is known as dispersion of light
 - a) 1 alone
 - b) **2 alone**
 - c) 1, 2
 - d) None

Explanation

White light consists of seven colours. Splitting of white light into its seven constituent colours (wavelength), on passing through a transparent medium is known as dispersion of light.

53. Refraction of a light ray is inversely proportional to_____

- a) Speed
- b) Frequency
- c) **Wavelength**
- d) All the above

Explanation

Dispersion s because, light of different colours-present in white light have different wavelength and they travel at different speeds in a medium. You know that refraction of a light ray in a medium

depends on its speed. As each coloured light has a different speed, the constituent-coloured lights are refracted at different extents, inside the prism. Moreover, **refraction of a light ray is inversely proportional to its wavelength.**

54. Which of the following light will deviate less?

- a) Violet
- b) Green
- c) **Red**
- d) Blue

Explanation

Red coloured light, which has a large wavelength, is **deviated less** while the violet-coloured light, which has a short wavelength, is deviated more.