## Light Reflection And Refraction MCQ TEST

10th Standard

Science

46 x 1 = 46

1) Which one of the following materials cannot be used to make a lens?

(a) Water (b) Glass (c) Plastic (d) Clay

2) The image formed by a concave mirror is observed to be virtual, erect and larger than the object.Where should be the position of the object?

(a) Between the principal focus and the centre of curvature (b) At the centre of curvature

(c) Beyond the centre of curvature (d) Between the pole of the mirror and its principal focus.

3) Where should an object be placed in front of a convex lens to get a real image of the size of the object?

(a) At the principal focus of the lens (b) At twice the focal length (c) At infinity

(d) Between the optical cantre of the lens and its principal focus

4) A spherical mirror and a thin spherical lens have each a focal length of - 15 cm. The mirror and the lens are likely to be

(a) both concave (b) both convex (c) the mirror is concave and the lens is convex.

(d) the mirror is convex, but the lens is concave.

5) No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be

(a) plane (b) concave (c) convex (d) either plane or convex

6) Which of the following lenses would you prefer to use while reading small letters found in a dictionary?

(a) A convex lens of focal length 50 cm (b) A concave lens of focal length 50 cm

(c) A convex lens of focal length 5 cm (d) A concave lens of focal length 5 cm

7) Which of the following can make a parallel beam of light when light from a point source is incident on it?

(a) Concave mirror as well as convex lens (b) Convex mirror as well as concave lens

(c) Two plane mirrors placed at 90º to each other (d) Concave mirror as well as concave lens

8) A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long image of the awl pin is formed at 30 cm infront of the mirror. The focal length of this mirror is.

(a) - 30 cm (b) - 20 cm (c) - 40 cm (d) - 60 cm

9) Under which of the following conditions a concave mirror can form an image larger than the actual object?

(a) When the object is kept at a distance equal to its radius of curvature

(b) When object is kept at a distance less than its focal length

(c) When object is placed between the focus and centre of curvature

(d) When object is kept at a distance greater than its radius of curvature

10) Which of the following statements is true?

(a) A convex lens has 4 dioptre power having a focal length 0.25 m

(b) A convex lens has -4 dioptre power having a focal length 0.25 m

(c) A concave lens has 4 dioptre power having a focal length 0.25 m

(d) A concave lens has -4 dioptre power having a focal length 0.25 m.

11) Magnification produced by a rear view mirror fitted in vehicles

(a) is less than one (b) is more than one (c) is equal to one

(d) can be more than or less than one depending upon the position of the object in front of it.

12) Rays from Sun converge at a point 15 cm in front of a concave mirror. Where an object should be placed so that size of its image is equal to the size of the object?

(a) 15 cm in front of the mirror   (b) 30 cm in front of the mirror

(c) between 15 cm and 30 cm in front of the mirror   (d) more than 30 cm in front of the mirror.

13) A full length of a distant tall building can definitely be seen by using.

(a) a concave mirror   (b) a convex mirror   (c) a plane mirror   (d) both concave as well as plane mirror

14) In torches search lights and headlights of vehicles the bulb is placed

(a) between the pole and the focus of the reflector   (b) very near to the focus of the reflector

(c) between the focus and centre of curvature of the reflector

(d) at the centre of curvature of the reflector.

15) The laws of reflection hold good for

(a) plane mirror only   (b) concave mirror only   (c) convex mirror only

(d) all mirrors irrespective of their shape

16) You are given water, mustard oil, glycerine and kerosene. In which of these media a ray light incident obliquely at same angle would bend the most?

(a) Kerosene   (b) Water   (c) Mustard oil   (d) Glycerine

17) A child is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.

(a) Plane, convex and concave   (b) Convex, concave and plane   (c) Concave, plane and concave

(d) Convex, plane and concave

18) In which of the following, the image of an object placed at infinity will be highly diminished and point sized?

(a) Concave mirror only   (b) Convex mirror only   (c) Convex lens only

(d) Concave mirror, convex mirror, concave lens and convex lens

19) The following Figure shows a ray of light as it travels from medium A to medium B. Refractive index of the medium B relative to medium A is
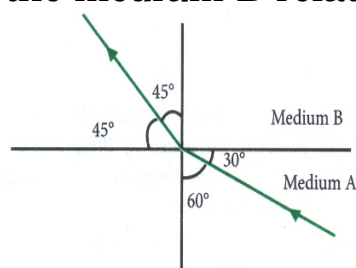
(a) 3/2   (b) 2/3   (c) 1/2   (d) 2

20) A light ray enters from medium A to medium B as shown in Figure. The refractive index of medium B relative to A will be
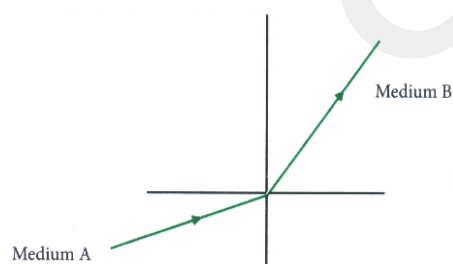

(a) greater than unity   (b) less than unity   (c) equal to unity   (d) zero

21) Beams of light are incident through the holes A and B and emerge out of box through the holes C and D respectively as shown in the Figure. Which of the following could be inside the box?
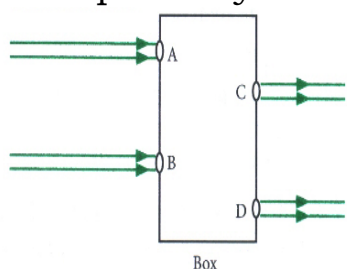

(a) A rectangular glass slab   (b) A convex lens   (c) A convex lens   (d) A prism

22) A beam of light is incident through the holes on side A and emerges out of the holes on the other face of the box as shown in the figure. Which of the following could be inside the box?
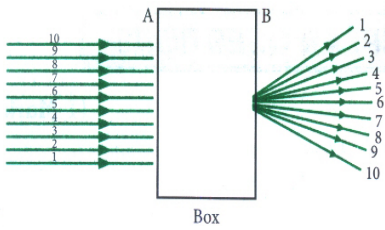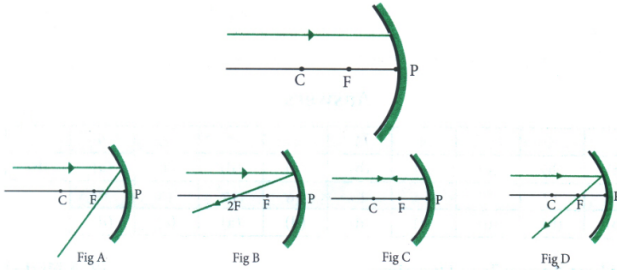

(a) Concave lens   (b) Rectangular glass slab   (c) Prism   (d) Convex lens

23) The path of a ray of light coming from air passing through a rectangular glass slab traced by four students are shown as A, B, C and D in Figure. Which one of them is correct?
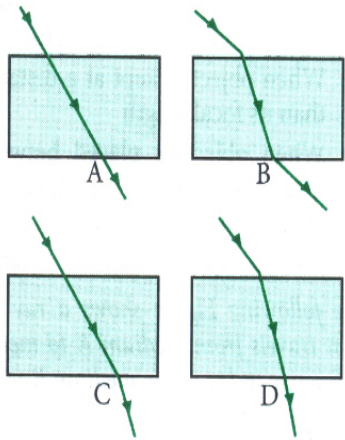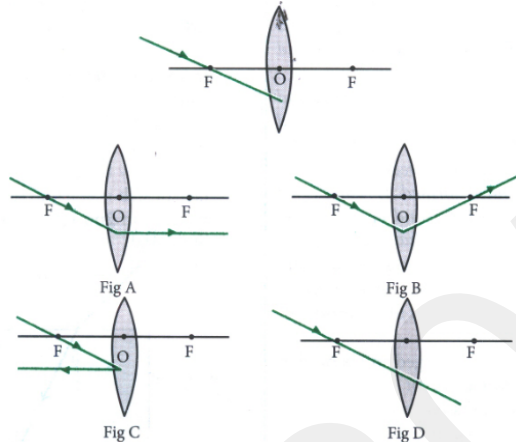

(a) A   (b) B   (c) C   (d) D

24) Which of the following ray diagrams is correct for the ray of light incident on a concave mirror as shown in Figure?

(a) Fig. A   (b) Fig. B   (c) Fig. C   (d) Fig. D

25) Which of the following ray diagram is correct for the ray of light incident on a lens shown in Figure?

(a) Fig. A   (b) Fig. B   (c) Fig. C   (d) Fig. D

26) Focal length of plane mirror is

(a) at infinity   (b) zero   (c) negative   (d) none of these

27) Image formed by plane mirror is

(a) real and erect   (b) real and inverted   (c) virtual and erect   (d) virtual and inverted

28) A concave mirror gives, real, inverted and same size image if the object is placed

(a) at F   (b) at infinity   (c) at C   (d) beyond C

29) Power of a lens is - 4, its focal length is

(a) 4 m   (b) - 40 cm   (c) - 0.25 m   (d) - 25 m.

30) A concave mirror gives virtual, erect and enlarged image if the object is placed

(a) at infinity   (b) between F and C   (c) between P and F   (d) at F

31) The mirror that always gives virtual and erect image of the object but image of smaller size than the size of the object is

(a) Plane mirror   (b) Concave mirror   (c) Convex mirror   (d) none of these

32) All the distances in case of spherical mirror are measured in relation

 (a) object to image   (b) the pole of the mirror   (c) the focus of the mirror   (d) the image to the object.

33) The radius of curvature and focal length of a concave mirror are

 (a) positive   (b) negative   (c) both   (d) none of these

34) The object distance in both concave as well as convex mirror is

 (a) negative   (b) positive   (c) zero   (d) none of these

35) The ratio of the speed of light in vacuum to that in a medium is known as

 (a) magnification   (b) refraction   (c) refractive index   (d) Snell's law

36) In optics an object which has higher refractive index is called

 (a) optically rarer   (b) optically denser   (c) optical density   (d) refractive index

37) The optical phenomena, twinkling of stars, is due to

 (a) atmospheric reflection   (b) total reflection   (c) atmospheric refraction   (d) total refraction

38) Convex lens forms a real, point sized image at focus, the object is placed

 (a) at focus   (b) between F and 2F   (c) at infinity   (d) at 2F

39) The unit of power of lens is

 (a) metre   (b) centimetre   (c) dioptre   (d) m-I

40) The radius of curvature of a mirror is 20 cm the focal length is

 (a) 20 cm   (b) 10 cm   (c) 40 cm   (d) 5 cm

41) The refractive indices of some media are given below

MEedium	Refractive index
X	1.51
y	1.72
Z	1.83
W	2.42

 In which of these is the speed of light minimum and maximum, respectively

 (a) X-minimum, W-maximu   (b) Z-minimum, W-maximum   (c) W-minimum, X-maximum

 (d) X-minimum, Z-maximum

42) The power of a lens is + 1.6 D. The nature of lens is

 (a) Convex lens   (b) Concave lens   (c) both concave an convex   (d) none of these

43) An incident ray makes 60° angle with the surface of the plane mirror, the angle of its reflection is

 (a) 60°   (b) 90°   (c) 30°   (d) 0°

44) The angle of reflection in the given figure is
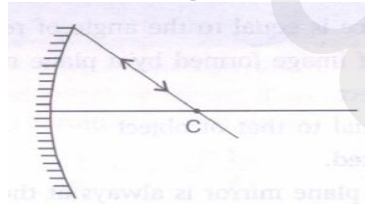
 (a) 90°   (b) 180°   (c) 0°   (d) 30°

45) A mirror that has very wide field view is

 (a) concave   (b) convex   (c) plane   (d) none of these

46) If the object is placed at focus of a concave mirror, the image is formed at

 (a) infinity   (b) focus   (c) centre of curvature   (d) between F and P.

20 x 1 = 20

47) **Assertion:** The sunlight that passes through the lens burns the paper at the spot.

 Reason: The heat produced due to the concentration of sunlight ignites the paper

 Codes

 (a) If both assertion and reason are true and the reason is correct explanation of assertion.

 (b) If both assertion and reason are true but reason is not a correct explanation of assertion. -.

 (c) If assertion is true and reason is false.

 (d) If both assertion and reason are false.

48) **Assertion:** The dentists use convex mirrors to see large images of the teeth of patients.

 Reason: The convex mirrors always produces the enlarged image of the object.

 Codes

 (a) If both assertion and reason are true and the reason is correct explanation of assertion.

 (b) If both assertion and reason are true but reason is not a correct explanation of assertion. -.

 (c) If assertion is true and reason is false.

 (d) If both assertion and reason are false.

49) **Assertion:** A convex lens of short focal length bends the light rays through large angles.

 Reason: This helps in by focusing the light closer to the optical centre.

 Codes

 (a) If both assertion and reason are true and the reason is correct explanation of assertion.

 (b) If both assertion and reason are true but reason is not a correct explanation of assertion. -.

 (c) If assertion is true and reason is false.

 (d) If both assertion and reason are false.

50) **Assertion:** Opticians prescribe corrective lenses indicating their powers

 Reason: The power of a convex lens is negative and that of a concave lens is positive.

 Codes

 (a) If both assertion and reason are true and the reason is correct explanation of assertion.

 (b) If both assertion and reason are true but reason is not a correct explanation of assertion. -.

 (c) If assertion is true and reason is false.

 (d) If both assertion and reason are false.

51) **Assertion:** The extent of refraction is different for different medium.

 Reason: Different medium have different refractive index.

 Codes

 (a) If both assertion and reason are true and the reason is correct explanation of assertion.

 (b) If both assertion and reason are true but reason is not a correct explanation of assertion. -.

 (c) If assertion is true and reason is false.

 (d) If both assertion and reason are false.

52) **Assertion:** Focal length of concave mirror is +ve

 Reason: Focal length of convex mirror is -ve

 Codes

 (a) If both assertion and reason are true and the reason is correct explanation of assertion.

 (b) If both assertion and reason are true but reason is not a correct explanation of assertion. -.

 (c) If assertion is true and reason is false.

 (d) If both assertion and reason are false.

53) **Assertion:** When a ray enter from air to water obliquely, it bends toward the normal.

 Reason: It is because water is denser medium than air.

 Codes

 (a) If both assertion and reason are true and the reason is correct explanation of assertion.

 (b) If both assertion and reason are true but reason is not a correct explanation of assertion. -.

 (c) If assertion is true and reason is false.

 (d) If both assertion and reason are false.

54) **Assertion:** Parallel rays meet at focus after refraction.

 Reason: Rays from distant objects are parallel rays.

 Codes

 (a) If both assertion and reason are true and the reason is correct explanation of assertion.

 (b) If both assertion and reason are true but reason is not a correct explanation of assertion.

 (c) If assertion is true and reason is false.

 (d) If both assertion and reason are false.

55) **Assertion:** If a ray of light is incident on a convex mirror along its principal axis, then the angle of incidence as well as the angle of reflection for a ray of light will be zero.

 Reason: A ray of light going towards the centre of curvature of a convex mirror is reflected back along the same path.

 Codes

 (a) Both A and R are true, and R is correct explanation of the assertion.

 (b) Both A and R are true, but R is not the correct explanation of the assertion.

 (c) A is true, but R is false.

 (d) A is false, but R is true.

56) **Assertion:** Linear magnification of a mirror has no unit.

 Reason: The ratio of height of the image to the height of the object is the linear magnification produced by mirror.

 Codes

 (a) Both A and R are true, and R is correct explanation of the assertion.

 (b) Both A and R are true, but R is not the correct explanation of the assertion.

 (c) A is true, but R is false.

 (d) A is false, but R is true

57) **Assertion:** Light is able to reach earth from the sun.

 Reason: Light rays can travel in vaccum.

 Codes

 (a) Both A and R are true, and R is correct explanation of the assertion.

 (b) Both A and R are true, but R is not the correct explanation of the assertion.

 (c) A is true, but R is false.

 (d) A is false, but R is true

58) **Assertion:** Property of converging of a convergent lens does not remain same in all media.

 Reason : Property of lens whether the ray is diverging or converging is independent of the surrounding medium.

 Codes

 (a) Both A and R are true, and R is correct explanation of the assertion.

 (b) Both A and R are true, but R is not the correct explanation of the assertion.

 (c) A is true, but R is false.

 (d) A is false, but R is true

59) **Assertion:** We can decide the nature of a mirror by observing the size of erect image in the mirror.

$m < 1$ Convex mirror $m = 1$ Plane mirror $m > 1$ Concave mirror
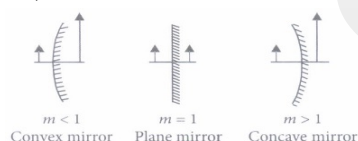
 Reason: The minimum distance between a real object and its real image in a concave mirror is non zero.

 Codes

 (a) Both A and R are true, and R is correct explanation of the assertion.

 (b) Both A and R are true, but R is not the correct explanation of the assertion.

 (c) A is true, but R is false.

 (d) A is false, but R is true

60) **Assertion:** A convex lens is made of two different materials. A point object is placed on the principal axis. The number of images formed by the lens will be two.

Reason: The image formed by convex lens is always virtual.

Codes

(a) Both A and R are true, and R is correct explanation of the assertion.

(b) Both A and R are true, but R is not the correct explanation of the assertion.

(c) A is true, but R is false

(d) A is false, but R is true.

61) **Assertion:** In diffused reflection, a parallel beam of incident light is reflected in different direction.

Reason: The diffused reflection of light is due to the failure of the laws of reflection.

Codes

(a) Both A and R are true, and R is correct explanation of the assertion.

(b) Both A and R are true, but R is not the correct explanation of the assertion.

(c) A is true, but R is false.

(d) A is false, but R is true

62) **Assertion:** The image of a virtual object formed by a thin converging lens is always real.

Reason: In the case of a thin lens, $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$

Codes

(a) Both A and R are true, and R is correct explanation of the assertion.

(b) Both A and R are true, but R is not the correct explanation of the assertion.

(c) A is true, but R is false.

(d) A is false, but R is true.

63) **Assertion**: In the case of concave mirror, the minimum distance between real object and its real image is zero.

Reason: If concave mirror forms virtual image of real object, the image is magnified.

Codes

(a) Both A and R are true, and R is correct explanation of the assertion.

(b) Both A and R are true, but R is not the correct explanation of the assertion.

(c) A is true, but R is false.

(d) A is false, but R is true.

64) **Assertion:** The size of the mirror affect the nature of the image.

Reason: Small mirrors always form virtual images.

Codes

(a) Both A and R are true, and R is correct explanation of the assertion.

(b) Both A and R are true, but R is not the correct explanation of the assertion.

(c) A is true, but R is false.

(d) A is false, but R is true.

65) **Assertion:** Keeping a point object fixed, if a plane mirror is moved, the image will also move.

Reason : In case of a plane mirror, distance of object and its image is equal from any point on the mirror.

Codes

(a) Both A and R are true, and R is correct explanation of the assertion.

(b) Both A and R are true, but R is not the correct explanation of the assertion.

(c) A is true, but R is false.

(d) A is false, but R is true.

66) **Assertion:** A plane mirror neither converges parallel rays of light nor diverges them.

Reason: The focal length of a plane mirror can be considered to be infinite.

Codes

(a) Both A and R are true, and R is correct explanation of the assertion.

(b) Both A and R are true, but R is not the correct explanation of the assertion.

(c) A is true, but R is false.

(d) A is false, but R is true.

17 x 4 = 68

67) The curved surface of a spoon can be considered as a spherical mirror. A highly smooth polished surface is called mirror. The mirror whose reflecting surface is curved inwards or outwards is called a spherical mirror. Inner part works as a concave mirror and the outer bulging part acts as a convex mirror. The center of the reflecting surface of a mirror is called pole and the radius of the sphere of which the mirror is formed is called radius of curvature.

(i) When a concave mirror is held towards the sun and its sharp image is formed on a piece of carbon paper for some time, a hole is burnt in the carbon paper. What is the name given to the distance between the mirror and carbon paper?

(a) Radius of curvature

(b) Focallength

(c) Principal focus

(d) Principal axis

(ii) The distance between pole and focal point of a spherical mirror is equal to the distance between

(a) pole and center of curvature

(b) focus point and center of curvature

(c) pole and object

(d) object and image

(iii) The focal length of a mirror is 15 cm. The radius of curvature is

(a) 15 cm

(b) 30 cm

(c) 45 cm

(d) 60 cm

(iv) The normal at any point on the mirror passes through

(a) focus

(b) pole

(c) center of curvature

(d) any point

(v) In a convex spherical mirror, reflection of light takes place at

(a) a flat surface

(b) a bent-in surface

(c) a bulging-out surface

(d) an uneven surface

68) The spherical mirror forms different types of images when the object is placed at different locations. When the image is formed on screen, the image is real and when the image does not form on screen, the image is virtual. When the two reflected rays meet actually, the image is real and when they appear to meet, the image is virtual.

A concave mirror always forms a real and inverted image for different positions of the object. But if the object is placed between the focus and pole, the image formed is virtual and erect.

A convex mirror always forms a virtual, erect and diminished image. A concave mirror is used as doctor's head mirror to focus light on body parts like eyes, ears, nose etc., to be examined because it can form erect and magnified image of the object. The convex mirror is used as a rear view mirrors in automobiles because it can form an small and erect image of an object.

(i) When an object is placed at the centre of curvature of a concave mirror, the image formed is

(a) larger than the object   **(b) smaller than the object**

(c) same size as that of the object   **(d) highly enlarged.**

(ii) No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be

(a) plane   **(b) concave**

(c) convex   **(d) either plane or convex.**

(iii) A child is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.

(a) Plane, convex and concave   **(b) Convex, concave and plane**

(c) Concave, plane and convex   **(d) Convex, plane and concave**

(iv) To get an image larger than the object, one can use

(a) convex mirror but not a concave mirror

(b) a concave mirror but not a convex mirror

(c) either a convex mirror or a concave mirror

(d) a plane mirror.

(v) A convex mirror has wider field of view because

(a) the image formed is much smaller than the object and large number of images can be seen

(b) the image formed is much closer to the mirror

(c) both (a) and (b)

(d) none of these.

69) The relation between distance of an object from the mirror (u), distance of image from the mirror (v) and the focal length (F) is called mirror formula. This formula is valid in all situations for all spherical mirrors for all positions of the object. The size of image formed by a spherical mirror depends on the position of the object from the mirror. The image formed by a spherical mirror can be bigger than the object, equal to the object or smaller than the object. The size of the image relative to the object is given by the linear magnification (m). Thus, the magnification is given by the ratio of height of image to the height of object. If magnification is negative, image is real and if it is positive, image is virtual.

(i) What is the position of an image when an object is placed at a distance of 20 em from a concave mirror of

focal length 20 cm?

(a) 5 cm   **(b) 20 cm**

(c) 10 cm   **(d) infinity**

(ii) Which of the following ray diagrams is correct for the ray of light incident on a concave mirror as shown in figure?

Figure A

Figure B

(a) Figure A   **(b) Figure B**
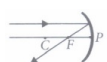

Figure C

Figure D

(C) Figure C   **(d) Figure D**

(iii) If the magnification of an image is -2, the characteristic of image will be

(a) real and inverted   **(b) virtual and enlarged**

**(c) virtual and inverted**   **(d) real and small**

(iv) The mirror formula holds for

(a) concave mirror   **(b) convex mirror**

(c) plane mirror   **(d) all of these**

(v) A parallel beam of light is made to fall on a concave mirror. An image is formed at a distance of 7.5 from the mirror. The focal length of the mirror is

(a) 15 cm   **(b) 7.5 cm**

(c) 3.75 cm   **(d) 10 cm**

70) When the rays of light travels from one transparent medium to another, the path of light is deviated. This phenomena is called refraction of light. The bending of light depends on the optical density of medium through which the light pass.
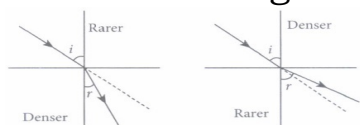
The speed of light varies from medium to medium. A medium in which the speed of light is more is optically rarer medium whereas in which the speed of light is less is optically denser medium. Whenever light goes from one medium to another, the frequency of light does not change however, speed and wavelength change. It concluded that change in speed of light is the basic cause of refraction.

(i) When light travels from air to glass, the ray of light bends

(a) towards the normal **(b) away from normal**

(c) anywhere **(d) none of these**

(ii) A ray of light passes from a medium A to another medium B. No bending of light occurs if the ray of light hits the boundary of medium B at an angle of

(a) 0° **(b) 45°**

(c) 90° **(d) 120°**

(iii) When light passes from one medium to another, the frequency of light

(a) increases **(b) decreases**

(c) remains same **(d) none of these**

(iv) When light passes from glass to water, the speed of light

(a) increases **(b) decreases**

(c) remains same **(d) first increases then decrease**

(v) The bottom of pool filled with water appears to be _____ due to refraction of light

(a) shallower **(b) deeper**

(c) at same depth **(d) empty**

71) The refraction oflight on going from one medium to another takes place according to two laws which are known as the laws of refraction of light. These laws are

1. The ratio of sine of angle of incidence to the sine of angle of refraction is always constant for the pair of media in contact.

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

This constant is called refractive index of the second medium with respect to the first medium.

Refractive index is also defined as the ratio of speed of light in vacuum to the speed of light in medium.

2. The incident ray, refracted ray and normal all lie in the same plane.

This law is called Snell's law of refraction.

(i) When light travels from air to glass,

(a) angle of incidence > angle of refraction

(b) angle of incidence < angle of refraction

(c) angle of incidence = angle of refraction

(d) can't say

(ii) When light travels from air to medium, the angle of incidence is 45° and angle of refraction is 30°. The refractive index of second medium with respect to the first medium is

(a) 1.41   **(b) 1.50**

(c) 1.23   **(d) 1**

(iii) In which medium, the speed of light is minimum?

(a) Air   **(b) Glass**

(c) Water   **(d) Diamond**

(iv) If the refractive index of glass is 1.5 and speed of light in air is 3 x 10^8 m/s. The speed of light in glass is

(a) 2 x 10^8 mls   **(b) 2.9 x 10^8 mls**
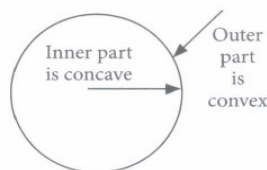
(c) 4.5 x 10^8 mls   **(d) 3 x 10^8 mls**

(v) Refractive index of a with respect to b is 2. Find the refractive index of b with respect to a.

(a) 0.4   **(b) 0.5**

(c) 0.25   **(d) 2.**

72) A lens is a piece of any transparent material bounded by two curved surfaces. There are two types of lenses convex lens and concave lens.

Convex lens is made up of a transparent medium bounded by two spherical surfaces such that thicker at the middle and thinner at the edges. Concave lens is also made up of a transparent medium such that thicker at the edge and thinner at the middle. The mid point of the lens is called optical centre.

A point on the principal axis, where the incident parallel rays meet or appears to come out after refraction is called focus.

A convex lens converges a parallel beam of light to other side whereas concave lens spreads out.

(i) Which of the following lenses would you prefer to use while reading small letters found in dictionary?
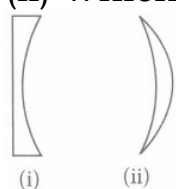
(a) A convex lens of focal length 50 cm

(b) A concave lens of focal length 50 cm

(c) A convex lens of focal length 5 cm

(d) A concave lens of focal length 5 cm

(ii) Which type oflenes are shown in given figure (i) and (ii).

(a) Plano concave, concavo convex

(b) Plano convex, convexo concave

(c) Double concave, concave convex

(d) Convexo concave, double convex

(iii) A small bulb is placed at the focal point of a converging lens. When the bulb is switched on, the lens produces

(a) a convergent beam of light

(b) a divergent beam of light

(c) a parallel beam of light

(d) a patch of coloured light

(iv) The part oflens through which the refraction takes place is called

(a) aperture

(b) centre of curvature

(c) principal axis

(d) focus

(v) A water drop acts as a

(a) convex lens

(b) concave lens

(c) double concave lens

(d) none of these

73) The lenses forms different types of images when object placed at different locations. When a ray is incident parallel to the principal axis, then after refraction, it passes through the focus or appears to come from the focus.When a ray goes through the optical centre of the lens, it passes without any deviation.

If the object is placed between focus and optical center of the convex lens, erect and magnified image is formed. As the object is brought closer to the convex lens from infinity to focus, the image moves away from the convex lens from focus to infinity. Also the size of image goes on increasing and the image is always real and inverted. A concave lens always gives a virtual, erect and diminished image irrespective to the position of the object.

(i) The location of image formed by a convex lens when the object is placed at infinity is

(a) at focus   (b) at 2F

(c) at optical   (d) between F
center   and 2F

(ii) When the object is placed at the focus of concave lens, the image formed is

(a) real and   (b) virtual and
smaller   inverted

(c) virtual and   (d) real and
smaller   erect

(iii) The size of image formed by a convex lens when the object is placed at the focus of convex lens is

(a) small   (b) point in size

(c) highly   (d) same as that
magnified   of object

(iv) When the object is placed at 2F in front of convex lens, the location of image is

(a) at F   (b) at 2 F on the
            other side

(c) at   (d) between F and
infinity   optical center

74) The relationship between the distance of object from the lens (u), distance of image from the lens (v) and the focal length (j) of the lens is called lens formula. It can be written as $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$

The size of image formed by a lens depends on the position of the object from the lens. A lens of short focal length has more power whereas a lens of long focal length has less power. When the lens is convex, the power is positive and for concave lens, the power is negative.

The magnification produced by a lens is the ratio of height of image to the height of object as the size of the image relative to the object is given by linear magnification (m).

When, m is negative, image formed is real and when m is positive, image formed is virtual. If m < 1, size of image is smaller than the object. If m > 1, size of image is larger than the object.

(i) An object 4 cm in height is placed at a distance of 10 cm from a convex lens of focal length 20 cm. The position of image is

(a) - 20 cm   (b) 20 cm

(c) -10 cm   (d) 10 cm

(ii) In the above question, the size of image is

(a) 16 cm   (b) 8 cm

(c) 4 cm   (d) 2 cm

(iii) An object is ,placed 50 cm from a concave lens and produces a virtual image at a distance of 10 cm infrontof lens. The focal length of lens is

(a) - 25 cm   (b) -12.5 cm

(c) 12.5 cm   (d) 10 cm

(iv) A convex lens forms an image of magnification -2 of the height of image is 6 cm, the height of object is

(a) 6 cm   (b) 4 cm

(c) 3 cm   (d) 2 cm

(v) A concave lens offocallength 5 ern, the power oflens is

(a) 20D   (b) -20D

(c) 90D   (d) -5 D