RAVI MATHS TUITION CENTER, WHATSAPP - 8056206308

Light Reflection And Refraction test 1

10th Standard

Science

ANSWERS CHECK IN NOTES (ALREADY SEND IN MY GROUP)

Exam Time : 01:30:00 Hrs

Total Marks : 60

15 x 1 = 15

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 90^o to each other (d) Concave mirror as well as concave lens

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

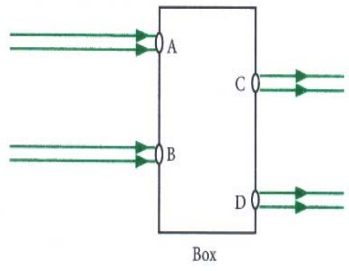
(a) is less than one (b) is more than one (c) is equal to one

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

9) 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

10) 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

11) Focal length of plane mirror is

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

12) 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

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

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

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14) 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

15) 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.

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16) **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.

17) **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.

18) **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

19) **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

20) **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.

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21) The image formed by a concave mirror is observed to be virtual, erect and larger than the object. Where should the position of the object be relative to the mirror? Draw ray diagram to justify your answer.

22) Define, 'refractive index of a transparent medium,' What is its unit? Which has a higher refractive index? glass or water?

23) List four characteristics of the images formed by plane mirrors.

24) The image of an object formed by a mirror is real, inverted and is of magnification -1. If the image is at a distance of 40 cm from the mirror, where is the object placed? Where would the image be if the object is moved 20 cm towards the mirror? State reason and also draw ray diagram for the new position of the object to justify your answer.

25) Write the laws of reflection

5 x 3 = 15

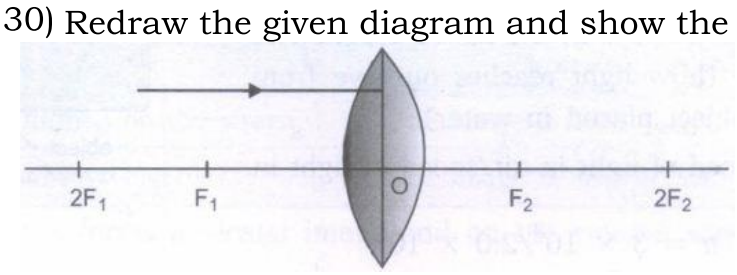
26) The magnification produced by a plane mirror is +1. What does this mean?

27) Draw a ray diagram to show the path of the reflected ray in each of the following cases. A ray of light incident on a convex mirror
(a) strikes at its pole making an angle from the principal axis.
(b) is directed towards its principal focus.
(c) is parallel to its principal axis.

28) A 4 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 24 cm. The distance of the object from the lens is 16 cm. Find the position, size and nature of the image formed, using the lens formula

29) Draw ray diagrams to represent the nature, position and relative size of the image formed by a convex lens for the object placed:
(a) At 2F
(b) Between F_1 and the optical centre O of lens

30) Redraw the given diagram and show the path of refracted ray.



3 x 5 = 15

31) Name the type of mirror used in the following situations.
(a) Headlights of a car
(b) Side/ rear-view mirror of a vehicle
(c) Solar furnace Support your answer with reason.

32) (a) Define optical centre of a spherical lens.
(b) A divergent lens has a focal length of 20 cm At what distance should an object of height 4 cm from the optical centre of the lens be placed so that its image is formed 10 cm away from the lens. Find the size of the image also.
(c) Draw a ray diagram to show the formation of image in above situation.

33) A student wants to project the image of a candle flame on the walls of school laborated by using a mirror
(a) Which type of mirror should he use and why?
(b) At what distance in terms of focal length 'f' of the mirror should he place the candle flame so as to get the magnified image on the wall?
(c) Draw ray diagram to show the formation of image in this case.
(d) Can he use this mirror to project a diminished image of the candle flame on the same wall? State 'how' if your answer is 'yes' and 'why not' if your answer is 'no'

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