

Respondent 1



Time to complete: 163:27 Points: 59/90

1. The image formed by retina of human eye is

1 / 1 pt

Auto-graded

Virtual and erect

Real and inverted ✓

Virtual and inverted

Real and erect

2. The least distance of distinct vision for a young adult with normal vision is

1 / 1 pt

Auto-graded

25m

20cm

25cm ✓

25mm

3. State the unit of magnification of a lens ?

0 / 1 pt

magnification of lens is $m = v/u$

magnification has no unit. It is a ratio of height of the image to the height of the height of the object.

4. The persistence of vision for human eye is

1 / 1 pt

Auto-graded

1/10th of a second

1/12th of a second

1/16th of a second ✓

1/18th of a second

5. The light sensitive cell present on retina and is sensitive to the intensity of light is:

1 / 1 pt
Auto-graded

Rods ✓

Cones

Rods and Cones

None of these

6. The amount of light entering the human eye is controlled by

1 / 1 pt
Auto-graded

Ciliary muscles

Pupil

Cornea

Iris ✓

7. Why do you take time to find object when you enter in dim lighted room from outside in the sun?

2 / 2 pts

because the amount of light outside is more as compared to inside . outside light is more so iris contracts so that possible amount of light goes inside our eyes as we enter a dim lighted room the amount of light is less so iris relax by making the pupil bigger . as it takes some time for the iris to go back to its original position, therefore, we take time to find the object when we entered a dim lighted room

your answer is right . but you can also frame it this way " in bright sunlight the pupil of our eye is smaller in diameter. So, when we enter the dim lit room soon after that, very little light enters our eye and we are unable to see properly."

8. Why does ray of light split when passed from prism?

2 / 2 pts

because of the dispersion. when the ray of light enters through the prism it bends due to the refraction. hence the light produces 7 colours among which red bends least and violet bends most

Very good answer. "This splitting of white light occurs since, different wavelengths of light travel at different speeds and bend at different angles. Smaller wavelengths bend more than the larger wavelengths . This phenomenon is called as dispersion."

9. Explain giving reason why the sky appears blue to an observer from the surface of the earth? What will the color of the sky be for an astronaut staying in the international space station orbiting the earth? Justify your answer giving reason 3 / 3 pts

the sky appears blue to the observer because of the scattering of light, the fine particles in the air scatter blue light. the scattering of light enters in our eye . for astronaut it would be dark at high altitude since at high altitude there is no atmosphere so the scattering of light also does not occur

very good answer. the sky appears blue to the observer because of the phenomenon scattering of light. In the white light blue and violet (smaller wavelengths) gets scattered the most by the fine particles in the air. Since our eyes are sensitive to blue light we see the sky as blue in color . For an astronaut it would be dark in space since there is no atmosphere so the scattering of light also does not occur.

10. What is a diameter of human eye? 1 / 1 pt

27 mm

11. Why can't we see things very close to our eyes? 2 / 2 pts

we cant see things very close to our eyes because of the accommodation which means ability of our eyes to see the object clearly. also, the minimum distance of our eyes to see the object is 25 cm beyond that we would see the object blurry

good answer. The least distance of distinct vision for seeing an object clearly is 25 cm. If the object is kept really close to our eyes our eye lens cannot converge more than a particular limit and the image falls behind the retina.

12. Focal length of plane mirror is_____. Justify your answer. 1 / 1 pt

infinity

13. Power of the lens is -40D, its focal length is 0 / 2 pts

- 2.5 m

$f = -(1/40)$ in m $f = (- 0.025)$ in m $f = -2.5$ cm

14. Explain the phenomena in water droplets causing the rainbow formation: (tick the right answers)

2 / 2 pts

- total internal reflection ✓
- scattering ✓
- reflection
- refraction ✓
- all of the above

15. The radius of curvature of a mirror is 20cm the focal length is

1 / 1 pt

$$r=2f \quad 20=2f \quad f=20/2 \quad f=10\text{cm}$$

very good

16. Convex lens focus a real, point sized image at focus, the object is placed

1 / 1 pt
Auto-graded

- At focus
- Between F and 2F

At infinity ✓

At 2F

17. What is the magnification of a plane mirror

2 / 2 pts

magnification of the mirror is +1 which means object size = to image size

very good.

18. What is silvering of mirror ?

0 / 2 pts

silver is the best reflector of the mirror backside of the plane mirror it is coated with red paint

To deposit a coating of pure silver on a glass sheet or a glass plate is called silvering of mirror. Silvering process converts a plane glass sheet into a mirror.

19. The refractive index of water is 1.33 and kerosene is 1.44. Calculate refractive index of the kerosene with respect to water. 0 / 2 pts

0.9



Correct answers: 1.08, 1.082

$$\begin{aligned} n(\text{water}) &= 1.33 \quad n(\text{kerosene}) = 1.44 \quad n(\text{kerosene w.r.t water}) \\ &= 1.44/1.33 = 1.082 \end{aligned}$$

20. State lens maker's formula and formula for power of lens 2 / 3 pts
- lens maker formula is $1/f = 1/v - 1/u$ power of lens = $p = v/u$

$$p = 1/f$$

21. We see advertisements for eye donation on television or in newspapers. Write the importance of such advertisement. 2 / 2 pts

such advertisements are about those people who have suffering from corneal blindness defective cornea or those who are blind or who have lost their eyes, important of such advertisement is that at least there would be some people who can help them by donating their one eye

you can also mention that our eye live up to 4 to 5 hours after death of a person.

22. (a) List three common refractive defects of vision.

4 / 4 pts

Suggest the way of correcting these defects. (b) About 45 lac people in the developing countries are suffering from corneal blindness. About 30 lac children below the age of 12 years suffering from this defect can be cured by replacing the defective cornea with the cornea of a donated eye. How and why can students of your age involve themselves to create awareness about this fact among people?

a] the three common refractive defects of vision are myopia, hypermetropia .presbiopia. the ways of correcting these effects are using the concave lens, convex lens or the person who is having both the defect he should use a bifocal lens b] if the students can involve themselves to create awareness about this fact among people so that they can tell to their father mother or relative so that if someone is dead they can immediately take him to the hospital and they can remove his eye, also it is a simple process it takes only 10 - 15 min to remove eye and then can donate it also a cataract patient can remove his eye and by doing surgery he or she can donate it

23. (a) What is dispersion of white light? What is the cause of this dispersion? (b) A glass prism is able to produce a spectrum when white light passes through it but a glass slab does not produce any spectrum. Explain why?

2 / 4 pts

a] dispersion of light is the process in which white light passes through a glass prism in which white light is split into seven colors called VIBGYOR. b] i dont know

Explained in class . in Glass slab the emergent rays do not come out in different angles for us to observe the spectrum . While in a glass prism light rays emerge at different angles which allows us to see the spectrum.

24. (a) A student cannot see a chart hanging on a wall placed at a distance of 3 m from him. Name the defect of vision he is suffering from. How can it be corrected? (b) Why is red color selected for danger signal lights?

4 / 4 pts

a]the student is suffering from myopia or nearsightedness. he can correct it by using a concave lens b it is selected because the scattering of the red colour is least so that we can see the red colour from a far distance also the wavelength of the red colour is 1.8 times greater than blue colour so therefore red.....

you can say using a concave lens of required power.

25. A spherical mirror produces an image of magnification -1 on a screen placed at a distance of 50 cm from the mirror. (a) Write the type of mirror. (b) Find the distance of the image from the object. (c) What is the focal length of the mirror?

1 / 4 pts

a] it is a concave mirror b]

26. (a) State the laws of refraction of light. If the speed of light in vacuum is $3 \times 10^8 \text{ ms}^{-1}$, find the speed of light in a medium of absolute refractive index 1.5. (b) Which phenomenon is responsible for making the path of light visible?

4 / 4 pts

a] 1]the laws of refraction of light are $\frac{\sin i}{\sin r}$ is constant 2] incident ray, normal, refracted ray lie on the same plane 3] whenever the light goes from one medium from another medium wavelength does not changes but velocity and frequency changes the speed of light in the medium of the absolute refractive index is 2 into 10 to the power 8 ms^{-1}
b] scattering of light is responsible for making the path of light visible

Snell's law $\frac{\sin i}{\sin r} = \frac{\mu_2}{\mu_1}$ where i - angle of incidence and r - angle of refraction

27. (a) What happens when a second identical prism is placed in an inverted position with respect to the first prism? (b) The power of the lens is $-4.0D$. What is the nature of this lens? (c) Which type of mirror is used to give erect and enlarged image of an object? 3 / 4 pts

a] the light passes through the first prism and splits in 7 colour and then when they enter 2nd prism they again come together and form a white light b] negative sign denotes that the image is real and inverted and enlarge c] concave mirror is used to give an erect and enlarged image of an object

b. $p = 1/f$ that means focal point is negative for concave lens focal point is negative

28. Explain why a ray of light passing through the centre of curvature of concave mirror gets reflected along the same path. 0 / 4 pts

I don't know

the angle of incidence and the angle of reflection are along the normal for a concave mirror when it passes through the center of curvature .

29. Explain the following : (a) How are we able to see distant and nearby objects clearly? (b) Which part of eye helps in changing curvature of lens? (c) Why no image is formed at blind spot? 2 / 3 pts

a] we are able to see distant and nearby objects clearly with the help of ciliary muscles so that it can contract and relax to see the object clearly b] ciliary muscles help in changing the curvature of the lens c] image is not formed at the blind spot because if the image is formed there so that it cannot go through the optic nerve and the image is not visible to us because our brain cannot sense it

(a) contract and relax the eye lens - mention that (c) there are no rod cells and cone cells at the blind spot .(better answer)

30. A concave lens of focal length of 10 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 the image formed. 3 / 3 pts

an object placed is 6 cm object with height is 30 cm image size is -2.5 cm

31. In an experiment with rectangular glass slab, a student observed that a ray of light incident at an angle 55 degrees with the normal on one face of the slab, after refraction strikes the opposite face of the slab before emerging out into air making an angle of 40 degrees with the normal. What value would you assign to the angle of refraction and angle of emergence ?

0 / 5 pts

I did not understand the question

32. (a) What is meant by " power of a lens "? (b) State and define the S.I. unit of power. (c) A convex lens of focal length 25 cm and a concave lens of focal length 10 cm are placed in close contact with each other. Calculate the lens power of the following combination.

2 / 5 pts

a]power lens means $p = 1/f$ b]si unite of power is D, dioptre c] power of lens combination = $p = p_1 + p_2 = p = 25 + 10p$ power of lens of combination = 35 cm

power of lens is the ability to converge the light rays - higher the power more the light rays converge.

33. State laws of Refraction and laws of refraction. Express in the form of equations.

5 / 5 pts

a] $\frac{\sin i}{\sin r} = \text{constant}$ b]f does not changes but v and lambda changes c] IR,N,RF lie on same plane

34. Draw the ray diagram in each case to show the position and nature of the imaha formed when the object is placed : (a) at the centre of curvature of a concave mirror (b) between the pole (P) and focus (F) of a concave mirror. (c) in front if a convex mirror (d) at 2F of a convex lens (e) in front of a concave lens.

3 / 5 pts

NOTE: Mention the position and nature in the answer below and send the drawings in whatsapp.

I don't know

35. What is optical density? Explain the cause of apparent position of the Sun during the sunset and sunrise?

0 / 2 pts

after 2 minutes we see the actual sunset and sunrise this is because of the scattering of light as it the light particles hit the molecules present in atmosphere and come in our eyes

optical density is the property of a material to bend and slow down the light . Higher the optical density higher the refractive index .
apparent position of the sun during the sunset and the sunrise is due to the atmospheric refraction.