



PHYSICS

BOOKS - NDA PREVIOUS YEARS

OPTICS

Mcqs

1. Two plane mirrors are inclined to each other such that a ray of light incident on the first mirror and parallel to the second is reflected

from the second mirror parallel to the first mirror. Determine the angle between the two mirrors:

A. a 0°

B. (b) 45°

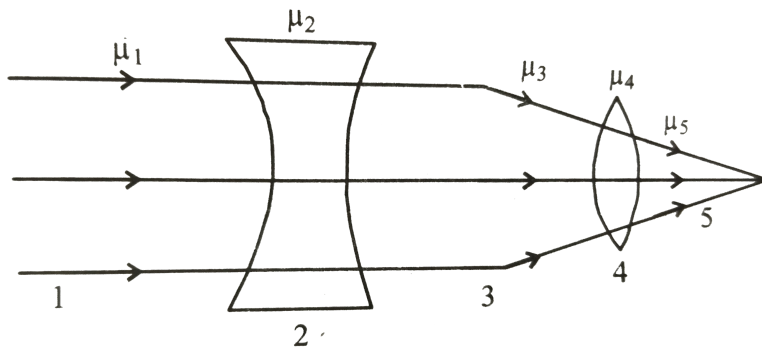
C. c 60°

D. d 90°

Answer: C



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2.

In the figure shown $\mu_1, \mu_2, \mu_3, \mu_4$ and μ_5 are the refractive

indices of the mediums 1,2,3,4 and 5 respectively. Consider

the following:

(1) $\mu_1 = \mu_2$ (2) $\mu_3 = \mu_4 = \mu_5$

(3) $\mu_2 < \mu_3$ (4) $\mu_4 > \mu_5$

Which of the above are correct?

A. a 1 and 2 only

B. b 1,2 and 3 only

C. c 1 and 3 only

D. d 3 and 4 onnly

Answer: B



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3. Which one of the following statements is correct?

In an astronomical telescope of refracting type,

A. a the objective and the eyepiece have the same focal

length

B. b the focal length of the objective is less than that of the

eyepiece

C. c the focal length of the objective is more than that of

the eyepiece

D. d the aperture of the eyepiece is more

than that of the

objective

Answer: C



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4. What is the phenomenon of the moon to appear bigger in

size as it approaches the horizon, called ?

A. a Atmospheric refraction of light

B. b Diffraction of light

C. c Scattering of light

D. d Total internal reflection of light by
water vapours

Answer: A



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5. What is the essential difference between a terrestrial telescope and an astronomical telescope ?

A. a One of the lenses in a terrestrial telescope is concave

B. b The final image formed in a terrestrial telescope is virtual

C. c A terrestrial telescope forms an erect image while an

astronomical telescope forms an

inverted image

D. d A terrestrial telescope forms an

inverted image while

an astronomical telescope forms an

erect image

Answer: C



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6. A beam of light travelling at a velocity of v m/s is incident at an angle 45° on a glass slab of refractive index 1.5. What is the velocity of the beam of light inside the slab ?

A. a v

B. b $2v/3$

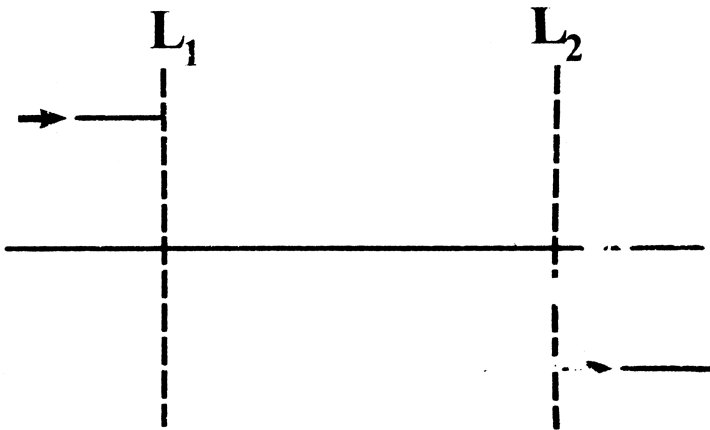
C. c $v/\sqrt{2}$

D. d None of these

Answer: B



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7.

In the figure shown above, L_1 and L_2 are two lenses and are

kept along the same axis. A parallel beam of

light falling on

L_1 leaves L_2 as a parallel beam:

Consider the following statements.

1. Both L_1 and L_2 can be convex lenses.
2. The distance between the two lenses. can be equal to sum of their focal lengths.

Which of the statements given above is/are correct ?

A. a Only 1

B. b Only 2

C. c Both 1 and 2

D. d Neither 1 nor 2

Answer: C



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8. Astigmatism for a human eye can be removed by using

A. a Concave lens

B. b Convex lens

C. c Cylindrical lesn

D. d Prismatic lens

Answer: C



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9. When light waves travel from air to glass, which variables are affected?

A. a Wavelength, frequency and velocity

B. b Velocity and frequency only

C. c Wavelength and frequency only

D. d Wavelength and velocity only

Answer: D



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10. Which one of the following is correct?

Large aperture telescopes are used for

A. a greater resolution

B. b greater magnification

C. c reducing lens aberration

D. d ease of manufacture

Answer: A



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11. Consider the following statements:

1. The focal length of the objective of a microscope is

less than the focal length of the eyepiece.

2. The minimum distance between an object

and its real

image formed by a convex lens of focal length

f is equal

to f .

A. a 1 only

B. b 2 only

C. c Both 1 and 2

D. d Neither 1 nor 2

Answer: C



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12. A far-sighted person has a near point at 100 cm. What must be the power of the correcting lens?

A. a -0.8 D

B. b -3.0 D

C. c +0.8 D

D. d +3.0 D

Answer: D



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13. In a simple microscope, the lens is held at a distance d from the eye and the image is formed at the least distance d of the distinct vision from the eye. What is the magnifying Power of the microscope ? Where f is the focal length of the lens.

A. a D / f

B. b $1 + (D / f)$

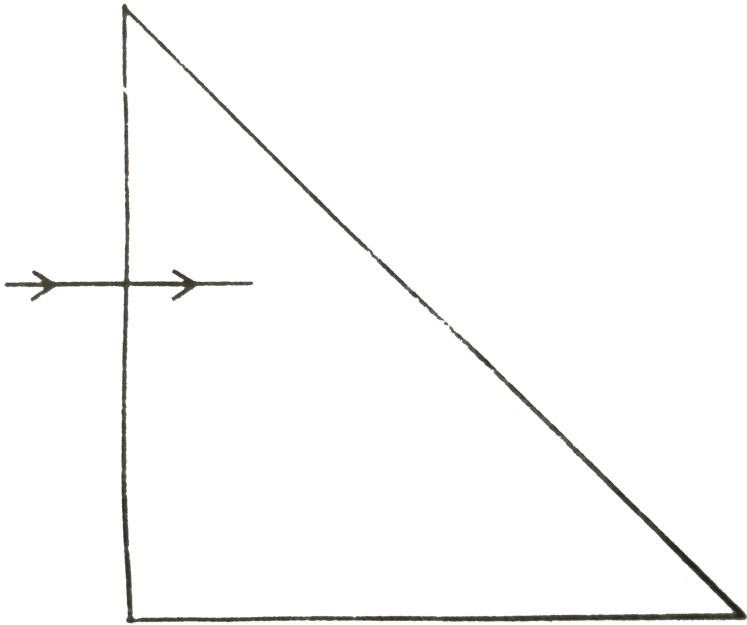
$$C. c 1 + (D - d) / f\}$$

$$D. d 1 + \{D + d) / f\}$$

Answer: B



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14.

A ray of light is incident normally on one of the faces of right angled isosceles prism as shown above. It undergoes total internal reflection from hypotenuse. Which one of the

following is the minimum refractive index of
the material of
the prism?

A. a 1.0

B. b 1.33

C. c 1.414

D. d 1.6

Answer: C



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15. Consider the following statements:

The principle of total internal reflection is applicable to

explain the

1. Formation of mirage in desert.
2. Formation of image in microscope.
3. Colour of evening sky.
4. Operation of optical fibres.

Which of the statement given above are correct?

A. a 1 and 4

B. b 3 and 4

C. c 2 and 3

D. d 1 and 2

Answer: A



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16. Which of the following statements is/are true regarding a light wave travelling from air to glass?

1. Its frequency remains unchanged.

2. Its speed changes.

Select the correct answer using the code given below:

A. a 1 only

B. b 2 only

C. c Both 1 and 2

D. d Neither 1 nor 2

Answer: C



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17. When an optician prescribes a -5D lens, what does it mean?

A. a Concave lens of 20 cm focal length

B. b convex lens of 5 cm focal length

C. c concave lens of 5 cm focal length

D. d convex lens of 5 cm focal length

Answer: A



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18. If a substance is behaving as convex lens in air and concave lens in water then which one of the following is its refractive index?

- A. a Smaller than air
- B. b Greater than both air and water
- C. c Greater than air but lesser than water
- D. d Almost equal to water

Answer: C



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19. The sun is visible a little before the actual sunrise because
of which one of the following?

- A. a Atmospheric reflection
- B. b Atmospheric dispersion
- C. c Atmospheric diffraction
- D. d Atmospheric refraction

Answer: D



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20. In vacuum. The speed of light

A. depends on its wavelength

B. depend on its frequency

C. depend on its intensity

D. d neither depend on its wavelength,

frequency nor

intensity

Answer: D



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21. How far must a girl stand in front of a concave spherical mirror of radius 120 cm to see an erect image of her face four times its natural size?

A. a 40 cm from the mirror

B. b 45 cm from the mirror

C. c 50 cm from the mirror

D. d 55 cm from the mirror

Answer: B



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22. An object is kept 5 cm in front of a concave mirror of focal length 15 cm. What will be the nature of the image?

A. a Virtual, not magnified

B. b Virtual, magnified

C. c Real, not magnified

D. d Real, magnified

Answer: B



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23. What is the telescope designed to search for earth-size

planets in the nearby region of our galaxy,
termed as ?

- A. a Hubble telescope
- B. b Kepler telescope
- C. c Copernicus telescope
- D. d Newton telescope

Answer: A



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24. An object is placed at a distance of 12 cm from a convex lens on its principal axis and a virtual image of certain size is formed. If the object is moved 8 cm away from the lens, a real image of the same size as that of the virtual image is formed. The focal length of the lens in cm is

A. a 15 cm

B. b 18 cm

C. c 16 cm

D. d 20 cm

Answer: B



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25. When objects at different distances are seen by the eye, which of the following remain constant?

A. a the focal length of the eye lens

B. b the object distance from the eye lens

C. c the radii of curvature of the eye lens

D. d the image distance from the eye lens

Answer: C



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26. The ratio of the focal length of the objective to the focal

length of the eyepiece is greater than one for

A. a microscope

B. b a telescope

C. c both microscope and telescope

D. d neither microscope nor telescope

Answer: B



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27. The radius of curvature of a plane mirror

A. a is zero

B. b is infinity

C. c can be anywhere between zero and infinity

D. d None of the above

Answer: B



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28. A coin in a beaker filled with water appears raised. This phenomenon occurs because of the property of

A. a reflection of light

B. b refraction of light

C. c total internal reflection of light

D. d interference of light

Answer: B



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29. A ray of light falls on a transparent glass plate. Part of it is reflected and part is

refracted. The reflected and refracted rays can be perpendicular to each other for

- A. a angle of incidence equal to 90°
- B. b angle of incidence equal to zero
- C. c only one angle of incidence
- D. d more than one angle of incidence

Answer: D



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30. Which one of the following is the correct angle between the incident and reflected rays when a ray of light incident normally on a plane mirror?

A. a 180°

B. b 90°

C. c 45°

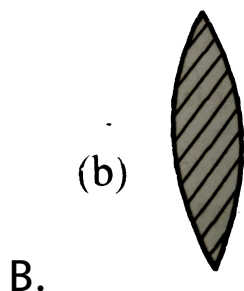
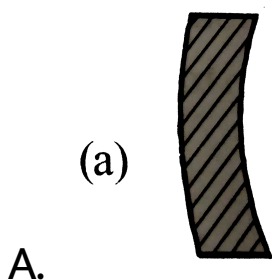
D. d 0°

Answer: D



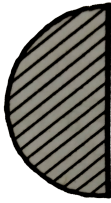
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31. Which one of the following four glass lenses is a diverging lens?



C.

(c)



D.

(d)



Answer: A



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32. Which one among the following statements is correct?

- A. a Convex mirrors are used by doctors to
examine oral
cavity
- B. b Concave mirrors are used as reflectors
- C. c Convex mirrors are used as reflectors
- D. d Convex mirrors should be used for
shaving

Answer: C



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33. Light travels in optical fibre irrespective of its shape because it is a device by which signals can be transferred from one location to another. It is based on the phenomenon of

- A. a diffraction of light
- B. b refraction of light
- C. c polarisation of light
- D. (total internal reflection of light

Answer: D



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34. Which one among the following is the major cause of blurring and unsharp images of objects observed through very large telescopes at the extreme limit of magnification ?

A. a Air turbulence of earth's atmosphere

B. b Poor optical polish achievable on large
mirrors

C. c Poor tracking capacities of telescopes

D. d Varying density of air in the Earth's
atmosphere

Answer: A



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35. Suppose you are standing 1 m in front of a plane mirror.

What should be the minimum vertical size of the mirror so

that you can see your full image in it ?

A. a 0.50m

B. b 2m

C. c Half of your height

D. d Twice your height

Answer: C



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36. Light travels slower in glass than in air because

A. a refractive index of air is less than that of glass

B. b refractive index of air is greater than that of glass

C. c density of glass is greater than that of air

D. d density of glass is less than that of air

Answer: A



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37. A spherical air bubble is embedded in a piece of glass. For a ray of light passing through the bubble, it behaves like a

A. a converging lens

B. b diverging lens

C. c plano-converging lens

D. d plano-diverging lens

Answer: B



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38. The stars seem to be higher on the sky than they actually are'. This can be explained by

A. a Atmospheric refraction of light

B. b dispersion of light

C. c total internal reflection

D. d diffraction of light

Answer: A



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39. When a ray of light is going from one medium to another its

A. a wavelength remains same

B. b frequency remains same

C. c frequency increases

D. d wavelength increases

Answer: B



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40. The image formed by a convex mirror of a real object is

larger than the object

(u = object distance, f = focal length)

A. a when $u < 2f$

B. b when $u > 2f$

C. c for all values of u

D. d for no value of u

Answer: D



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41. Refractive index of an optical medium changes with

1. the nature of the medium.
2. the change in the angle of incidence of the ray.
3. colour of the incident ray.

Select the correct answer using the code given below:

A. a 1 and 3 only

B. b 2 and 3 only

C. c 1 and 2 only

D. d 1,2 and 3

Answer: D



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42. A one-rupee coin is placed at the bottom of a vessel. Water is then poured into the vessel such that the depth of water becomes 20 cm. If water has refractive index

$\frac{4}{3}$, the coin

would be seen at a depth of

A. a 20 cm

B. b about 26 cm

C. c 15 cm

D. d 25 cm

Answer: C



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43. Which one among the following is used to make periscope?

A. a Concave lens

B. b concave mirror

C. c Plane mirror

D. d None of the above

Answer: C



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44. What is the power of the lens, if the far point of a short-sighted eye is 200 cm?

A. a -0.5 D

B. b 2 D

C. c 1 D

D. d -1.5 D

Answer: A



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45. A refracting telescope consists of

A. a one concave mirror and one convex lens

B. b two convex lenses of equal focal length

C. c two concave mirrors of different focal lengths

D. d two convex lenses of unequal focal lengths

Answer: D



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46. If the focal length of the biconvex lens is 25 cm, then the power of the lens will be

A. a + 4 dioptr

B. b - 4 dioptr

C. c +0.04 dioptr

D. d -0.04 dioptr

Answer: A



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47. Two thin convex lenses of focal lengths 4 cm and 8 cm are separated by a distance of 4 cm in air. The combination will have the focal length

A. a 4 cm

B. b 8 cm

C. c 12 cm

D. d 32 cm

Answer: A



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48. Consider the following statements:

Hypermetropia is a defect of vision in which

1. a person cannot see the distant objects clearly
2. a person cannot see the near objects clearly

3. the near point of the eye gets shifted away from the normal position

4. the far point of the eye gets shifted towards the eye

Which of the statements given above are correct?

A. a 1 and 3

B. b 2 and 4

C. c 1 and 4

D. d 2 and 3

Answer: D



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49. To obtain the powerful parallel beams of light from a vehicle's headlight, one must use

- A. a front surface silvered plane mirror
- B. b back surface silvered plane mirror
- C. c concave mirror
- D. d convex mirror

Answer: C



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50. Yellow colour light is used as fog light because yellow colour

A. a light is most scattered by fog

B. b has the longest wavelength among all colours

C. c has the longest wavelength among all colours except red and orange but red colour is already used for brake light and stop light whereas orange colour is avoided due to its similarity with red

D. d has the shortest wavelength among all colours not already reserved for other purpose

Answer: C



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51. The mirror used for the head light of a car is

A. a spherical concave

B. b plane

C. c cylindrical

D. d parabolic concave

Answer: D



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52. Telescopes are placed in space to view distant galaxies

primarily to

A. a get closer to the observed objects

B. b avoid the absorption of light of other

radiations in the

atmosphere of the earth

C. c avoid light pollution from the earth,s
populated areas

D. d avoid steering the telescope against
the earth's motion

Answer: B



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53. The human eye is like a camera and hence
it contains a
system of lens. The eye lens forms

- A. a a straughtht or upright, real image of the object on the retina
- B. b an inverted, virtual image of the object on the retina
- C. c an inverted, real image of the object on the retina
- D. d a straight or upright, real image of the object on the iris

Answer: C



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54. An object is placed at the focus of a concave mirror. The image will be

A. a real, inverted, same size at the focus

B. a real, upright, same size at the focus

C. a virtual, inverted, highly enlarged at infinity

D. d real, inverted, highly enlarged at infinity

Answer: D



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55. An optician prescribes a lens of power $=-0.5$ dioptre. The corresponding lens must be a

A. a convex lens of focal length 2 m

B. b convex lens of focal length 50 cm

C. c concave lens of focal length 2 m

D. d concave lens of focal length 50 cm

Answer: C



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56. The following question consist of two statements, one

labelled as the Assertion a and the other as

'Reason (R),

You are to examine these two statements carefully and select the answer:

Assertion a : A person stands at a distance of 1m in front of a concave mirror. If the radius of curvature of the mirror is 4 m, the image of the person lies at a distance 2m behind the mirror.

Reason(R): The general mirror equation confirms the location of the image from the mirror and it could be a real image.

- A. a Both A and R are individually true and R is the correct explanation of A
- B. b Both A and R are individually true but R is NOT the correct explanation of A
- C. c A is true but R is false
- D. d A is false but R is true

Answer: C



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57. Statement I : A myopic person is advised to use concave lens.

Statement II : The eye lens of a myopic person focuses the parallel rays coming from distant object in front of distant objects in front of the retina.

A. a Both the statements individually true and Statement II is the correct explanation of Statement I.

- B. b Both the statements are individually true but Statement II is not correct explanation of Statement I.
- C. c Statement I is true but Statement II is false.
- D. d Statement I is false but Statement II is true.

Answer: A



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58. Statement I : Convex mirror is used as a driver mirror.

Statement II : Images formed by convex mirror are diminished in size.

A. a Both the statements individually true and Statement II is

the correct explanation of Statement I.

B. b Both the statements are individually true but Statement II is

not correct explanation of Statement I.

C. c Statement I is true but Statement II is false.

D. d Statement I is false but Statement II is true.

Answer: B



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59. A beautiful rainbow on the sky is due to the

A. a dispersion of sunlight from a water droplet only.

B. b reflection of sunlight from a water droplet only.

C. c reflection and refraction of sunlight from a water droplet only.

D. d refraction, dispersion and reflection of
sunlight from a
water droplet.

Answer: D



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60. During sunrise and sunset, sun appears
reddish-orange
because

A. a during that time sun emits only reddish-orange light.

B. b all other colours are absorbed by the atmosphere.

C. c reddish-orange light is least scattered by the atmosphere.

D. d all other colours apart from reddish-orange are reflected back by the atmosphere.

Answer: C



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61. Rays of light get refracted while passing from air to glass because

A. a density of glass is higher than that of air.

B. b they can not be reflected from a glass surface.

C. c glass absorbs energy from the light rays.

D. d speed of light in glass is less than the speed of light in air.

Answer: A



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62. White light while passing through a glass prism breaks up into light of different colours because

A. a refractive index of glass for different colours of light is different.

B. b glass prism absorbs white light and emits lights of several colours in different directions.

C. c of total internal reflection of white light on surfaces of the prism.

D. d of the interference of different colours
inside the prism.

Answer: A



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63. Consider the following statements:

A real image

1. can be formed on a screen
2. is always magnified and inverted

Which of the statements given above is/are correct?

A. a 1 only

B. b 2 only

C. c Both 1 and 2

D. d Neither 1 nor 2

Answer: C



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64. If speed of light in air is $3 \times 10^8 \text{ m/s}$, the speed of light in glass (with refractive index 1.5) would be

A. a $2 \times 10^8 \text{ m/s}$

B. b $4.5 \times 10^8 \text{ m/s}$

C. c $3 \times 10^8 \text{ m/s}$

D. d $1.5 \times 10^8 \text{ m/s}$

Answer: A



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65. While looking at an image formed by a convex lens (one half of the lens is covered with a black paper), which one of the following will happen to the image?

A. a Half of the image will be visible

B. b Intensity of the image will be diminished

C. c Image will be inverted now

D. d One can see an image of smaller size

Answer: B



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66. In optical instruments, the lenses are used to form image by the phenomenon of

- A. a reflection
- B. b refraction
- C. c scattering
- D. d diffusion

Answer: B



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67. A ray of light travels from a medium of refractive index n_1 to a medium of refractive index n_2 . If angle of incidence is i and

angle of refraction is r , then $\frac{\sin i}{\sin r}$ is equal to

A. n_1

B. n_2

C. $c \frac{n_2}{n_1}$

D. $d \frac{n_1}{n_2}$

Answer: C



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68. Light waves projected on oil surface show seven colours due to the phenomenon of

A. a polarization

B. b refraction

C. c reflection

D. d interference

Answer: B



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69. Which one of the following processes explains the splitting of a beam of white light into its constituent colours?

A. a Dispersion

B. b Reflection

C. c Diffraction

D. d Polarization

Answer: A



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70. Optical glass used in the construction of spectacles is made by

A. a flint glass

B. b Crookes glass

C. c quartz glass

D. d hard glass

Answer: A



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71. Light waves are

A. a electro-mechanical waves

B. b electro-magnetic waves

C. c electro-optical waves

D. d magneto-optical waves

Answer: B



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72. Statement I : Diamond is very bright.

Statement II : Diamond has very low refractive index.

A. a Both the statements are individually true and Statement

II is the correct explanation of Statement

I.

B. b Both the statements are individually true but Statement

II is not correct explanation of

Statement I.

C. c Statement I is true but Statement II is false.

D. d Statement I is false but Statement II is true.

Answer: C



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73. Statement I : Due to diffused of irregular reflection of light, a closed room gets light even if no direct sunlight falls falls inside the room. Statement II : Irregular reflection,

where the reflected rays

are not parallel, does not follow the laws of reflection.

A. a Both the statements are individually

true and Statement

II is the correct explanation of Statement

I.

B. b Both the statements are individually

true but Statement

II is not correct explanation of

Statement I.

C. c Statement I is true but Statement II is

false.

D. d Statement I is false but Statement II is

true.

Answer: A



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74. Optical fibres, though bent in any manner, allows light to pass through. What is the inference that one can draw from it?

A. a The concept that light travels in straight path is wrong

B. b Light can flow through the optical fibres

C. c Light can travel through the fibres because of their

ductility

D. d Light can travel through the fibres due to multiple total internal reflections

Answer: D



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75. A ray of light when refracted suffers change in velocity. In this context, which one among the following

statements is

correct ?

A. a Velocity increases as the ray passes

from a rarer to a

denser medium

B. b Velocity decreases as the ray passes

from a denser to a

rarer medium

C. c Velocity decreases as the ray passes

from a rarer to a

denser medium

D. d Change of velocity does not depend on

the natyre of

medium

Answer: C



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76. An object placed 10 cm in front of a convex

lens of focal

length 15 cm. The image produced will be

A. a Real and magnified

B. b Virtual and magnified

C. c Virtual and reduced in size

D. d Real and reduced in size

Answer: B



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77. In case of a compound microscope which of the following

Statements is/are correct ?

1. The focal length of the eye piece is larger than the focal length of the objective

2. The focal length of the eye piece is smaller than the focal length of the objective

3. The image produced in a normal optical microscope is real

4. The image produced in a normal optical microscope is virtual

Select the correct answer using the code given below:

A. a 1 only

B. b 1 and 4

C. c 2 and 3

D. d 2 and 4

Answer: B



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78. Which one of the following statements is not correct ?

A. a The radius of curvature of a concave mirror is twice its

focal length

B. b Power of a convex lens is negative and that of a

concave lens is positive

C. c the radiu of a plane mirror is infinity

D. d When a ray of light passes from an optically denser

medium to an optically rarer medium,

the angle of

refraction is greater than the

corresponding angle of

incidence

Answer: B



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79. Which one of the following statements is correct?

A. a The image formed by a concave mirror
for an object

lying at infinity is at the principal focus,

highly

diminished, real and inverted

B. b A ray of light parallel to the principal
axis after reflection

from a concave mirror appears to

diverge from the

principal focus of the mirror

C. c The focal length of spherical mirror is

double of its

radius of curvature

D. d A ray of light travelling from a rarer

medium to a denser

medium bends away from the normal

Answer: A



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80. An object is placed at the centre of curvature of a concave mirror of focal length 16 cm. If the object is shifted by 8 cm towards the focus, the nature of the image would be

- A. a Real and magnified
- B. b Virtual and magnified
- C. c real and reduced
- D. d virtual and reduced

Answer: A



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81. An object is placed at a distance of 10cm from a convex mirror of focal length 15cm .

Find the position and nature of the image ?

A. a real, inverted and magnified

B. b real, erect and magnified

C. c virtual, erect and reduced

D. d virtual erect and magnified

Answer: D



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82. A lady is standing in front of a plane mirror at a distance of 1 m from it. She walks 60 cm towards the mirror. The distance of her image now from herself (ignoring the thickness of the mirror) is

A. a 20 cm

B. b 60 cm

C. c 80 cm

D. d 120 cm

Answer: C



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83. The brightness of a star depends on its

A. a size and temperature only

B. b size and distance from the earth

C. c size, temperature and mass

D. d size, temperature and distance from
the earth

Answer: D



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84. An optical illusion which occurs mainly in deserts during the hot summer is based on the principle of

A. a Reflection

B. b Interference

C. c Dispersion

D. d Total internal reflection

Answer: D



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85. Match List I with List II and select the correct answer using

the code given below the Lists :

Lists I

(Disease)

A. Hypermetropia

B. Presbyopia

C. Myopia

D. Cataract

Lists II

(Remedy)

1. Concave lens

2. Bifocal lens

3. Surgery

4. Convex lens

Code

A B C D

A. a 4 2 1 3

B. b 4 1 2 3

C. c 3 1 2 4

D. d 3 2 1 4

Answer: A



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86. Which one of the following statements is correct about the magnification of an optical microscope?

A. a Magnification increases with the increase in focal

length of eyepiece

B. b Magnification increases with the increase in focal

length of objective

C. c Magnification does not depend upon

the focal length

of eyepiece

D. d Magnification decreases with the

increase in focal

length of eyepiece

Answer: D



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87. The radii of curvature of the faces of a double convex lens are 10 cm and 20. The refractive index of the glass is 1.5.

What is the power of this lens (in units of diopetre)?

A. a +7.5 D

B. b -7.5 D

C. c +2.5 D

D. d +5.0 D

Answer: A



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88. Absolute refractive indices of glass and water are $\frac{3}{2}$ and $\frac{4}{3}$. The ratio of velocity of light in glass and water will be

A. a $3 : 4$

B. b $4 : 3$

C. c $8 : 7$

D. d $8 : 9$

Answer: D



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89. The mirrors used as rear-view mirrors in vehicles are

A. a concave

B. b convex

C. c cylindrical

D. d plane

Answer: C



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90. Concave mirror is used in headlights of vehicles, because
it

- A. a focuses light from the bulb onto nearby vehicles
- B. b sends parallel rays
- C. c fits well into the shape of the headlight

D. d is cheaper than other mirrors

Answer: A



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91. Which one of the following is the natural phenomenon

based on which a simple periscope works?

A. a Reflection of light

B. b Refraction of light

C. c Dispersion of light

D. d Total internal reflection of light

Answer: D



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92. Which one of the following statements about the refractive index of a material medium with respect to air is correct?

A. a It can be either positive or negative

B. b It can have zero value

C. c It is unity for all materials

D. d It is always greater than one

Answer: D



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93. Two convex lenses with power 2 dioptre are kept in contact

with each other. The focal length of the

combined lens

system is

A. a 0.10 m

B. b 2 m

C. c 4 m

D. d 0.25 m

Answer: D



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94. Consider the following statements about a microscope and a telescope

1. Both the eyepiece and the objective of a microscope

are convex lenses.

2. The focal length of the objective of a telescope is

larger than the focal length of its eyepiece.

3. The magnification of a telescope increases with the

increases in focal length of its objective.

4. The magnification of a microscope increases with the
increases in focal length of its objective.

Which of the statements given above are correct?

A. a 1 and 3 only

B. b 1 and 4

C. c 2, 3, and 4

D. d 1,2 and 3

Answer: D



95. If the focal length of a convex lens is 50 cm, which one of the following is its power?

A. a + 2 dioptre

B. b +0.02 diopter

C. c -0.5 dioptre

D. d +0.5 dioptre

Answer: A



96. The refractive indices of two media, are denoted by n_1 and n_2 and the velocities of light in these two media are respectively v_1 and v_2 . If n_2/n_1 is 1.5, which one of the following statements is correct?

A. v_1 is 1.5 times v_2

B. v_2 is 1.5 times v_1

C. v_1 is equal to v_2 .

D. v_1 is 3 times v_2 .

Answer: A



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97. Which one of the following statements is correct for a plane mirror?

A. a 1st focal length is zero.

B. b The size of the image of an object placed in front of the mirror is slightly less than that of the object.

C. c The image is virtual, erect and laterally inverted.

D. d Its focal length is 200 cm.

Answer: C



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98. An object is placed in front of a convex mirror. Which one of the following statements is correct?

A. a It will never form an inverted image.

B. b The image moves towards the focus when the object moves towards the mirror.

C. c Depending on the position of the object with respect

to the mirror, the image can be inverted and real.

D. d The size of the image becomes larger than that of the object when the object is placed at a distance equal to half the focal length.

Answer: A



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99. The light energy escaping from the Sun can be spread by

A. a a shower of rain drops

B. b a plane mirror

C. c a convex lens

D. d a combination of a convex lens and a concave lens

Answer: A



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100. The focal length of the objective lens of a telescope is 50 cm. If the magnification of the telescope is 25, then the focal length of the eye-piece is

A. a 12.5 cm

B. b 5 m

C. c 2 m

D. d 10 cm

Answer: C



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101. The Sun is seen little before it rises and for a short while after it sets. This is because of

- A. a total internal refraction
- B. atmospheric refraction
- C. apparent shift in the direction of Sun
- D. dispersion

Answer: B



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102. When a beam of white light passes through a glass prism, the colour of light beam that deviates the least is

A. a Blue

B. b Red

C. c Green

D. d Violet

Answer: B



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103. LIGO stands for

A. a Laser Interferometer Gravitational
wave Observatory

B. b Light Interferometer Gravitational
wave Observatory

C. c Light Induced Gravity Observatory

D. d Laser Induced Gaseous Optics

Answer: A



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