1. Image in formed in front of retina.	
2. Image in formed on the retina.	
3. Image in formed behind the.	
4. No image is formed on the retina.	
Ans: 2. Image in formed on the retina.	
Explanation:	
Myopia occurs when the eyeball is too long, relative to the focusing power of the cornea and lens of the eye.	
Q2. How does the eye change in order to focus on near or distant objects?	1 Mark
1. The lens moves in or out.	
2. The retina moves in or out.	
3. The lens becomes thicker or thinner.	
4. The pupil gets larger or smaller.	
Ans: 3. The lens becomes thicker or thinner.	
Explanation:	
The eye lens becomes thicker to focus on nearby objects and thinner to focus on distant objects.	
Q3. The stars twinkle but the planets do not twinkle at night because:	1 Mark
1. The stars are small but the planets are large.	
2. The stars are very large but planets are small.	
3. The stars are much nearer but planets are far off.	
4. The stars are far off but planets are nearer to earth.	
Ans: 4. The stars are far away, but the planets are nearer to the earth.	
Explanation:	
Stars twinkle because they are far away. The planets do not twinkle at night because they are nearer to the earth.	
Q4. Which of the following phenomena contributes significantly to the reddish appearance of the sun at sunrise or	1 Mark
sunset?	
1. Dispersion of light.	
2. Scattering of light.	

- 3. Total internal reflection of light.
- 4. Reflection of light from the earth.

Ans: 2. Scattering of light.

Q1. In myopia:

Explanation: Red colour scatters the least and hence travels the farthest. During sunset or sunrise, light has to travel a longer distance to reach us. Hence, only red light reaches to us and the sky appears reddish.

Q5. The path of a ray of light passing through a glass prism is shown below:

1 Mark

1 Mark



In this diagram the angle of prism, angle of incidence, angle of emergence and angle of deviation respectively have been represented by:

O, Y, Z and N.
 P, Y, M and Z.
 O, X, M and Z.
 P, X, Z and N.

Ans: 3. O, X, M and Z.

Explanation:

O is the angle of prism.

Angle of incidence is the angle made by the incident ray with the normal to the surface of the prism. Here, X represents the angle of incidence.

Angle of emergence is the angle made by the emerging ray with the normal to the surface of the prism. Here, M represents the angle of emergence.

Angle of deviation is the angle made by the emerging ray with the incident ray. Here, Z represents the angle of deviation. Hence, the correct option is C.

Q6. The sky appears blue because some of the blue component of sunlight is scattered 1 Mark by:

- 1. Gas molecules present in air.
- 2. Dust particles present in air.
- 3. Water droplets suspended in air.
- 4. Soot particles present in air.

Ans: 1. Gas molecules present in air.

Explantion:

The sky appears blue because some of the blue component of sunlight is scattered by the gas molecules (nitrogen and oxygen) present in the air.

- Q7. A student is observing the diagram showing the path of a ray of light passing through a glass prism. He would find 1 Mark that for all angles of incidence the ray of light bends:
 - 1. Towards the normal while entering into the prism and away from the normal while emerging out of the prism.
 - 2. Away from the normal while entering into the prism and towards the normal while emerging out of the prism.
 - 3. Away from the normal while entering as well as while emerging out of the prism.
 - 4. Towards the normal while entering as well as while emerging out of the prism.
- Ans: 1. Towards the normal while entering into the prism and away from the normal while emerging out of the prism.

Explanation:

When a ray of light enters a glass prism, it travels from a rarer medium to a denser medium. So, the ray of light bends towards the normal.

When the ray of light emerges from the glass prism, it travels from a denser medium to a rarer medium. So, the ray of light bends away from the normal.

Hence, the correct option is A.

Q8. The colour of scattered light depends on.

1. Size of scattering particles.

- 2. Wavelength of light.
- 3. (Both (a) and (b).
- 4. None of these.

Ans: 3. Both (a) and (b).

Explanation:

The colour of the scattered light depends on the size of the scattering particle. Very fine particles scatter mainly blue light while particles of larger size scatter light of longer wavelengths i.e. red colour.

Q9. With both eyes open, a person's field of view is about:

1 Mark

1.90°

2. 50°

3. 180°

Ans: 3. 180 ^o	
Explanation:	
A person's field of view with both eyes open is about 180°.	
Q10. The human eye can focus objects at different distances by adjusting the focal length of the eye lens. This is due to.	1 Mark
1. presbyopia.	
2. accommodation.	
3. near-sightedness.	
4. far-sightedness.	
Ans: 2. accommodation.	
Q11. A person cannot see the distant objects clearly (though he can see the nearby objects clearly). He is suffering	1 Mark
from the defect of vision called:	
1. Cataract.	
2. Hypermetropia.	
3. Myopia.	
4. Presbyopia.	
Ans: 3. Myopia.	
Explanation:	
Myopia is a defect of vision because of which a person cannot see distant objects clearly but can see nearby objects disti	nctly.
Q12. The human eye possesses the power of accommodation. This is the power to:	1 Mark
1. Alter the diameter of the pupil as the intensity of light changes.	
2. Distinguish between lights of different colours.	
3. Focus on objects at different distances.	
4. Decide which of the two objects is closer.	
Ans: 3. Focus on objects at different distances.	
Explanation:	
The human eye possesses the power of accommodation to focus on objects at different distances.	
Q13. The blue colour of sky is due to:	1 Mark
1. Refraction of light.	
2. Dispersion of light.	
3. Diffraction of light.	
4. Scattering of light.	
Ans: 4. Scattering of light.	

Explantion:

The blue colour of the sky is due to the scattering of light by the air molecules in the atmosphere.

Q14. A student focussed the image of a distant object using a device X on a white screen S as shown in the figure. If the

distance of the screen from the device is 30 cm, select the correct statement about the device X.



- 1. The device X is a concave mirror of focal length 15 cm
- 2. The device X is a concave mirror of focal length 30 cm.
- 3. The device X is a concave mirror of radius of curvature 30 cm.
- 4. The device X is a convex mirror of focal length 30 cm.

Ans: 2. The device X is a concave mirror of focal length 30 cm.

Q15. While performing the experiment to trace the path of a ray of light passing through a glass prism, four students marked the incident ray and the emergent ray in their diagrams in the manner shown below:



Ans: 3. III.

Explanation:

When light goes from rarer medium to denser medium it bends towards the normal. The light bends away from the normal when it goes from a denser medium to rarer medium.

This condition is fulfilled in figure (III).

Q16. Study the following diagrams in which the path of a ray of light passing through a glass prism as traced by four 1 Mark students P, Q, R and S is shown:



The student who has traced the path correctly is

1. P 2. Q 3. R

4. S

Ans: 2. Q.

Explanation:

Student Q has traced the path correctly.



When light is travelling from a rarer medium to a denser medium, it bends towards the normal to the surface, while the light from a denser medium to a rarer medium bends away from the normal to the surface. Hence, the correct option is B.

Q17. Which of the following phenomena is based on atmospheric refraction?

- 1. Tyndall effect.
- 2. Colour of sun at sunrise.
- 3. Twinkling of stars.
- 4. None of these.

Ans: 3. Twinkling of stars.

Explanation:

Atmospheric refraction is the phenomenon of bending of light on passing through the earth's atmosphere. Twinkling of stars Stars twinkle on account of atmospheric refraction. Starlight undergoes refraction many times before reaching the earth.

Q18. Which of the following colour of white light is least deviated by the prism?

1 Mark

1 Mark

1. Green.

2. Violet.

3. Indigo.

4. Yellow.

Ans: 2. Yellow.

Explanation:

Yellow is the colour of white light that is the least deviated by a prism because it has the largest wavelength of the colours given in the alternatives.

Q19. The person is having a defect of vision called:

- 1. Presbyopia.
- 2. Myopia.
- 3. Astigmatism.
- 4. Hypermetropia.

Ans: 2. Myopia.

Explanation:

The optician has prescribed concave lenses for the person's spectacles, as a concave lens decreases the converging power of the eye lens. This shows that the person is suffering from short-sightedness, or myopia.

- Q20. Even in absolutely clear water, a diver cannot see very clearly because. 1 Mark
 - 1. Rays of lights get diffused.
 - 2. Velocity of light is reduced in water.
 - 3. Ray of light passing through the water makes it turbid.
 - 4. The focal length of the eye lens in water gets changed and the image is no longer focused sharply on the retina.

Ans: 2. Velocity of light is reduced in water.

Explanation:

Velocity of light is reduced in water water is a denser medium and light goes slower than light goes in air.

- Q21. The bluish colour of water in deep sea is due to:
 - 1. The presence of algae and other plants found in water.
 - 2. Reflection of sky in water.
 - 3. Scattering of light.
 - 4. Absorption of light by the sea.

Ans: 2. Reflection of sky in water.

Explanation: Water is colourless. Its colour appears to be same as the object reflected by it.

Q22. In the following diagram, the correctly marked angles are:



1 Mark

1 Mark

1 Mark

1 Mark

1. All 2. Only $\angle i$ and $\angle A$ 3. $\angle i$, $\angle r$ and $\angle A$ 4. $\angle i$, $\angle A$ and $\angle D$

Ans: 3. $\angle i$, $\angle r$ and $\angle A$

Q23. A student sitting on the last bench can read the letters written on the blackboard but is not able to read the letters written in his text book. Which of the following statements is correct?

- 1. The near point of his eyes has receded away.
- 2. The near point of his eyes has come closer to him.
- 3. The far point of his eyes has come closer to him.
- 4. The far point of his eyes has receded away.

Ans: 1. The near point of his eyes has receded away.

Explanation:

The student sitting on the last bench can read the letters written on the blackboard but is not able to read the letters written in his text book because he is suffering from hypermetropia or far sightedness. He can see distant objects clearly but cannot seen earby objects distinctly.

Q24. In the following diagram, the path of a ray of light passing through a glass prism is shown:



In this diagram the angle of incidence, the angle of emergence and the angle of deviation respectively are (select the correct option):

- 1. X, R and T.
- 2. Y, Q and T.
- 3. X, Q and P.
- 4. Y, Q and P.

Ans: 4. Y, Q and P.

Explanation:

The angle made by the incident ray with the normal to the first face of the prism is called incident angle, which is angle Y here.

The angle made by the emergent ray with the normal to the surface when it comes out from the prism after refraction is called emergent angle, which is angle Q here.

The angle between the incident ray and the emergent ray is called angle of deviation, which is angle P here.

Hence, the correct option is D.

Q25. A beam of white light is shone onto a glass prism. The light cannot be:

- 1. Deviated.
- 2. Dispersed.
- 3. Focused.
- 4. Refracted.

Ans: 3. Focused.

Explanation:

A beam of white light when shone on to a glass prism can be deviated, dispersed or refracted, but it cannot be focused.

Q26. A ray of light in incident on one of the refracting face of the prism. It emerges out from its other side making an

angle of emergence:

- 1. Smaller than angle of incidence.
- 2. Equal to prism angle.
- 3. Equal to angle of incidence.
- 4. Greater than the angle of incidence.

Ans: 3. Equal to angle of incidence.

Q27. Tyndall effect is colloidal solution is due to:

1. Reflection of light. 2. Absorption of light. 3. Scattering of light.

4. Refraction of light.

Ans: 3. Scattering of light.

Explanation:

The Tyndall effect is the scattering of light as a light beam passes through a colloid. The individual suspension particles scatter and reflect light, making the beam visible.

Q28. Sunset is red because at that time the light coming from the sun has to travel:

1 Mark

1 Mark

1 Mark

- 1. Lesser thickness of earth's atmosphere.
- 2. Greater thickness of earth's atmosphere.
- 3. Varying thickness of earth's atmosphere.
- 4. Along the horizon.

Ans: 2. Greater thickness of the earth's atmosphere.

Explantion:

The sun appears red at sunset because, at that time, the sun is near the horizon and, therefore, sunlight has to travel through a greater thickness of the earth's atmosphere.

Q29. The clear sky appears blue because:

1 Mark

1 Mark

- 1. Blue light gets absorbed in the atmosphere.
- 2. Ultraviolet radiations are absorbed in the atmosphere.
- 3. Violet and blue lights get scattered more than lights of all other colours by the atmosphere.
- 4. Light of all other colours is scattered more than the violet and blue colour lights by the atmosphere.

Ans: 3. Violet and blue lights get scattered more than lights of all other colours by the atmosphere.

Explanation : Intensity of scattered light, $1 \propto \frac{1}{\lambda^4}$. The wavelength of blue and violet light is smaller than the wavelengths of other colours.

Q30. Which amongst the given radiation is preferred for taking photographs in fog?

- 1. Ordinary visible light.
- 2. Infrared.
- 3. Microwave.
- 4. X-rays.

Ans: 2. Infrared.

Explanation:

Infrared radiation has the maximum wavelength and minimum frequency. Energy is directly proportional to frequency; hence energy associated with them is also low. Thus the infrared radiation gets least scattered by the tiny particles in the fog.

That is why infrared wave is preferred over all others which have a higher frequency and gets scattered hence can't be focused.

Q31. The colour of white light which is deviated the maximum on passing through the glass prism is:

- 1. Blue.
- 2. Indigo.
- 3. Red.
- 4. Orange.

Ans: 2. Indigo.

Explanation:

Among the colours blue, indigo, red and orange, indigo is deviated the maximum on passing through a glass prism.

Q32. The stars appear higher in the sky than they actually are, due to:

- 1. Diffraction of light.
- 2. Scattering of light.
- 3. Refraction of light.

1 Mark

1 Mark

4. Reflection of light.

Ans: 3. Refraction of light.

Explanation:

The refraction of light changes the path of starlight, making stars appear higher in the sky than they actual are.

Q33. Though a woman can see the distant object clearly, she cannot see the nearby objects clearly. She is suffering from the defect of vision called:

1. Long-sight.

2. Short-sight.

3. Hind-sight.

4. Mid-sight.

Ans: 1. Long sight.

Explanation:

As the woman can see distant objects clearly, but not nearby objects, she is suffering from the defect of vision called long sight.

- Q34. Which of the following statements is correct regarding the propagation of light of different colours of white light 1 Mark in air?
 - 1. Red light moves fastest.
 - 2. Blue light moves faster than green light.
 - 3. All the colours of the white light move with the same speed.
 - 4. Yellow light moves with the mean speed as that of the red and the violet light.
- Ans: 3. All the colours of the white light move with the same speed.

Explanation:

Speed of light is a constant value regardless of its color.

- Q35. Which of the following phenomena of light are involved in the formation of a rainbow?
 - 1. Reflection, refraction and dispersion.
 - 2. Refraction, dispersion and total internal reflection.
 - 3. Refraction, dispersion and internal reflection.
 - 4. Dispersion, scattering and total internal reflection.
- Ans: 3. Refraction, dispersion and internal reflection.

Explanation:

A rainbow is caused by dispersion, refraction and internal reflection of sunlight by tiny water droplets, present in the atmosphere and always formed in a direction opposite to that

of the sun. The water droplets act like small prisms. They refract and disperse the incident sunlight, then reflect it internally and finally refract it again when it comes out of

the raindrop.

- Q36. The coloured light having the maximum speed in glass prism is:
 - 1. Blue.
 - 2. Green.
 - 3. Violet.
 - 4. Yellow.

Ans: 4. Yellow.

Explanation:

Yellow is the coloured light with the maximum speed in a glass prism as it has the greatest wavelength.

Q37. Due to atmospheric refraction of sunlight, the time from sunrise to sunset is lengthened by about:

- 1. 6 minutes.
- 2. 2 minute..
- 3. 4 minutes.
- 4. 5 minutes.

Explanation:

We can see the sun about two minutes before the actual sunrise.

Q38. A prism is used to:

Change the path of light by reflection and refraction both.
 Rotate the image.

3. Disperse the light into its components.

4. All of these.

Ans: 1. Change the path of light by reflection and refraction both.

Explanation:

Prisms are made in many different forms and shapes, depending on the application. The Porro prism, for example, consists of two prisms arranged both to invert and to reverse.

1 Mark

1 Mark

1 Mark

- Q39. When light rays enter the eye, most of the refraction occurs at the:
 - 1. Crystalline lens.
 - 2. Outer surface of the cornea.
 - 3. Iris.
 - 4. Pupil.

Ans: 2. Outer surface of the cornea.

Explanation: The transparent, anterior portion of outer layer of eyeball is termed as cornea which causes most of the bending of incident light rays, i.e. refraction, to make them converge which in turn causes image formation on retina.

Q40. The colour of white light which suffers the maximum bending (or maximum refraction) on passing through a glass 1 Mark

prism is:

- 1. Yellow.
- 2. Orange.
- 3. Red.
- 4. Violet.

Ans: 4. Violet.

Explanation:

The colour violet of white light suffers the maximum refraction on passing through a glass prism as it has the shortest wavelength.

Q41. A student sitting on the last bench in the class cannot read the writing on the blackboard clearly but he can read 1 Mark

the book lying on his de clearly. Which of the following statement is correct about the student?

- 1. The near point of his eyes has receded away.
- 2. The near point of his eyes has come close to him.
- 3. The far point of his eyes has receded away.
- 4. The far point of his eyes has come closer to him.

Ans: 4. The far point of his eyes has come closer to him.

Explanation:

As the far point of the eye is closer to him than normal, he can see nearby objects, but not distant objects, clearly.

- Q42. As light from a far off star comes down towards the earth:
 - 1. It bends away from the normal.
 - 2. It bends towards the normal.
 - 3. It does not bend at all.
 - 4. It is reflected back.

Ans: 2. It bends towards the normal.

Explanation:

As the light from a far-off star comes towards the earth, it bends towards the normal because the air is denser closer to the surface of the earth.

Q43. The defect of vision in which the eye-lens of a person gets progressively cloudy resulting in blurred vision is called:

1 Mark

1. Myopia.

2. Presbyopia.

3. Colourblindness.

4. Cataract.

Ans: 4. Cataract.

Explanation:

Cataract is the defect of vision because of which the eye lens gets progressively cloudy, resulting in blurred vision.

Q44. The day is longer on the earth by about 4 minutes because:

1. The earth is round in shape.

2. The earth rotates on its axis.

3. The earth revolves around the sun.

4. The earth has atmosphere.

Ans: 4. The earth has atmosphere.

Explanation:

The day is longer by about four minutes because the earth has an atmosphere.

- Q45. Which of the following coloured light has the least speed in glass prism?
 - 1. Violet.
 - 2. Yellow.
 - 3. Red.
 - 4. Green.

Ans: 1. Violet

Explanation:

The colour violet travels the slowest in a glass prism owing to its short wavelength.

- Q46. With age Near point and Far point receeds due to:
 - A: Weakening of ciliary muscles.
 - B: Reducing ability to change the focal length.
 - 1. 'A' is correct.
 - 2. 'B' is correct.
 - 3. Both 'A' and 'B' are correct.
 - 4. Neither 'A' nor 'B' is correct.

Ans: 3. Both 'A' and 'B' are correct

Explanation:

The young human eye can change focus from distance (infinity) to as near as 6.5cm from the eye. This dramatic change in focal power of the eye of approximately 15

dioptres (the reciprocal of focal length in metres) occurs as a consequence of areduction in zonular tension induced by ciliary muscle contraction.

- Q47. The focal length of the eye lens increases when eye muscles.
 - 1. Are relaxed and lens becomes thinner.
 - 2. Contract and lens becomes thicker.
 - 3. Are relaxed and lens becomes thicker.
 - 4. Contract and lens becomes thinner.

Ans: 1. Are relaxed and lens becomes thinner.

Explanation:

The focal length of the eye lens increases when eye muscles. When the muscles are relaxed, the lens becomes thin. Thus, its focal length increases.

Q48. Light rays are deviated by a prism.



1 Mark

1 Mark

1 Mark

1 Mark

The deviation angle d is measured for light rays of different frequency including blue light and red light. Which graph is correct?

- 1. (a)
- 2. (b)
- 3. (c)

4. (d)

Ans: 4. (d) Explanation: Since the red light is deviated the least and the violet is deviated the most so we can devise that the wavelength of blue is less than that of red. Wavelength and frequency have inverse relation. Hence red light has minimum frequency and frequency keeps on increasing as we go towards blue light.

Q49. The twinkling of stars is due to atmospheric:

- 1. Reflection of light.
- 2. Dispersion of light.
- 3. Interference of light.
- 4. Refraction of light.

Ans: 4. Refraction of light.

Explanation:

Atmospheric refraction is responsible for the twinkling of stars.

- Q50. The focal length of concave lens required to correct myopia is:
 - 1. Equal to the least distance of distinct vision.
 - 2. Less than the distance of far point of eye.
 - 3. Equal to the distance of far point of eye.
 - 4. Equal to the sum of distance shown to (a) and (c).

Ans: 2. Less than the distance of far point of eye.

Explanation:

The minimum distance, at which objects can be seen most distinctly without strain, is called the least distance of distinct vision.

Q51. An image is formed on the retina. This is due to:

- 1. Successive refraction at the retina.
- 2. Successive refraction at the cornea.
- 3. Reflection at the cornea.
- 4. Reflection at the retina.

Ans: 2. Successive refraction at the cornea.

Explanation:

The lens of the human eye is biconvex. When we see an object, the light rays from the object get refracted and as a result of that the image will focus on the retina. The image thus formed is real and inverted. This image is carried to the brain in the form of electrical signals by the optic nerve.

- Q52. At noon the sun appears white as:
 - 1. Light is least scattered.
 - 2. All the colours of the white light are scattered away.
 - 3. Blue colour is scattered the most.
 - 4. Red colour is scattered the most.

Ans: 1. Light is least scattered.

Explanation: Sun is directly over head and sunlight travel relatively shorter distance causing only little of the blue and violet colours to be scattered.

1 Mark

1 Mark

1 Mark

1 Mark

1 Mark

Q53. A person finds difficulty in seeing nearby objects clearly. His vision can be corrected by using spectacles containing:

1. Converging lenses.

2. Diverging lenses.

3. Prismatic lenses.

4. Chromatic lenses.

Ans: 1. Converging lenses.

Explanation:

Converging lenses are used to correct the defect of vision and enable the person to see nearby objects clearly.

Q54. For the refraction of a ray of light through a glass prism, the path of a ray of light is shown below:



The angle of incidence, the angle of emergence and the angle of deviation respectively have been represented by

Y, N, Z.
 X, Z, M.
 X, N, Z.
 X, M, Z.

Ans: 4. X, M, Z.

Q55. Out of the following, the colour of light having the maximum wavelength is:

1 Mark

1. Violet.

2. Indigo.

3. Green.

4. Orange.

Ans: 4. Orange

Explanation:

Of the given colours of light, orange has the maximum wavelength.

Q56. A glass slab is placed over a page on which the word VIBGYOR is printed with each letter in corresponding colour. 1 Mark

Then, which of the following is correct?

- 1. The image of all the letters will be in the same place as that on paper.
- 2. Letter V is raised more.
- 3. Letter R is raised more.
- 4. None of the above.

Ans: 2. Letter V is raised more.

Explanation:

The letter of violet colour (i.e., V) appears to be raised maximum, while the letter of red colour (i.e., R) appears to be raised minimum. Since apparent depth $= \frac{\text{real depth}}{\text{refractive index}}$ and refractive index of glass is most for the violet light while least for the red light, therefore the apparent depth is least for violet and most for the red.

Q57. For a healthy eye, the rays of light entering the eye form a sharp image on retina. For a myopic eye, the rays from 1 Mark distant objects focus in front of the retina forming a blurred image. Which of the following lenses shown below will help to correct myopia?

(a) (b) (c)
$$(d)$$

1. (a)

2. (b) 3. (c)

4. (d)

Ans: 4. (d)

Explanation:

Myopia is caused due to large converging power of eye lens or due to too long eye ball. In both the cases image is formed before the retina. To form image on retina we must use the lens that diverges the ray of light such that the net convergence decreases, also minus power lens that is a concave lens does exactly the same. Whereas the other lens converge the beam. Hence option D is correct.

Q58. A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the 1 Mark prism as shown in figure. In which of the following cases, after dispersion, the third colour from the top corresponds to the colour of the sky?



Ans: 2. (c)

Explanation:

The colour of sky is blue. The colour having the maximum wavelength is deviated the least. The deviation is towards the base of the prism. The white light consist of seven colours red, orange, yellow, green, blue, indigo, violet .violet is deviated the most and red the least. Blue is the third colour starting from violet. So we see that image B has based on the top hence having colours in such an order that blue is the third. Hence option B is correct.

Q59.	A beam of white light falls on a glass prism. The colour of light which undergoes the least bending on passing	1 Mark
	through the glass prism is:	

1 Mark

1 Mark

1 Mark

- 1. Violet.
- 2. Red.
- 3. Green.
- 4. Blue.

Ans: 2. Red.

Explanation:

The colour red undergoes the least bending on passing through the glass prism as it has longest wavelength.

Q60. To focus the image of a nearby object on the retina of an eye:

- 1. The distance between eye-lens and retina is increased.
- 2. The distance between eye-lens and retina is decreased.
- 3. The thickness of eye-lens is decreased.
- 4. The thickness of eye-lens is increased.

Ans: 4. The thickness of the eye lens is increased.

Explanation:

The thickness of the eye lens is increased to focus the image of a nearby object on the retina of the eye.

- Q61. Which of the following controls the amount of light entering the eye?
 - 1. Ciliary muscles.
 - 2. Lens.
 - 3. Iris.
 - 4. Cornea.

Explanation:

The iris controls the amount of light entering the eye.

Q62. A young man has to hold a book at arm's length to be able to read it clearly. The defect of vision is:

- 1. Astigmatism.
- 2. Myopia.
- 3. Presbyopia.
- 4. Hypermetropia.

Ans: 4. Hypermetropia.

Explanation:

Hypermetropia is the defect of vision the young man is suffering from, because of which he finds it difficult to see nearby objects.

Q63. Which of the following changes occur when you walk out of bright sunshine into a poorly lit room?

- 1. The pupil becomes larger.
- 2. The lens becomes thicker.
- 3. The ciliary muscle relaxes.
- 4. The pupil becomes smaller.

Ans: 1. The pupil becomes larger.

Explanation:

The pupil becomes larger when you walk out of bright sunshine into a poorly lit room, to allow more light to enter the eye.

- Q64. Which of the following is not caused by the atmospheric refraction of light?
 - 1. Twinkling of stars at night.
 - 2. Sun appearing higher in the sky than it actually is.
 - 3. Sun becoming visible two minutes before actual sunrise.
 - 4. Sun appearing red at sunset.
- Ans: 4. Sun appearing red at sunset.

Explantion:

The sun appears red at sunset not because of the atmospheric refraction of light but because of the scattering effect of light.

Q65. The least distance of distinct vision for a young adult with normal vision is about:

- 1. 25m.
- 2. 2.5cm.
- 3. 25cm.
- 4. 2.5m.

Ans: 3. 25cm.

Explanation:

The least distance for distant vision for a young adult with normal vision is 25cm.

Q66. Study the following ray diagrams:



Ans: 3. I, II and III.

Q67. The red colour of the sun at the time of sunrise and sunset is because:

1. Red colour is least scattered.

1 Mark

1 Mark

1 Mark

2. Blue colour is least scattered.

3. Red colour is most scattered.

4. Blue colour is most scattered.

Ans: 2. Red colour is least scattered.

Explantion:

The sun appears red at sunrise and sunset because the colour red is the least scattered.

Q68. Having two eyes gives a person:

- 1. Deeper field of view.
- 2. Coloured field of view.
- 3. Rear field of view.
- 4. Wider field of view.

Ans: 4. Wider field of view. **Explanation**: Having two eyes gives a person a wider field of view. Q69. The change in focal length of an eye lens is caused by the action of the. 1 Mark 1. Pupil. 2. Retina. 3. Cilliary muscles. 4. Iris. Ans: 3. Cilliary muscles. Q70. The term " accommodation" as applied to the eye, refers to its ability to: 1 Mark 1. Control the light intensity falling on the retina. 2. Erect the inverted image formed on the retina. 3. Vary the focal length of the lens. 4. Vary the distance between the lens and retina. **Ans:** 3. Vary the focal length of the lens. **Explanation:** The term 'accommodation' as applied to the eye refers to its ability to vary the focal length of the lens. Q71. Refraction of light in the eye occurs at: 1 Mark 1. The lens only. 2. The cornea only. 3. Both the cornea and the lens. 4. The pupil. Ans: 3. Both the cornea and the lens. **Explanation:** The refraction of light in the eye occurs at both the cornea and the lens. Q72. The human eye forms the image of an object at its. 1 Mark 1. Cornea. 2. Iris. 3. Pupil. 4. Retina. Ans: 4. Retina. The human eye forms the image of an object at its retina. Q73. The atmospheric refraction of light causes the twinkling of: 1 Mark 1. Planets only. 2. Stars only.

3. Planets and stars.

Ans: 2. Stars only.

Explanation:

The twinkling of stars is caused by the atmospheric refraction of light.

Q74. The animals called predators have:

- 1. Both the eyes on the sides.
- 2. One eye on the side and one at the front.
- 3. One eye on the front and one at the back.
- 4. Both the eyes at the front.

Ans: 4. Both the eyes at the front.

Explanation:

Predators have both the eyes at the front of their heads so that they can judge the distance of their prey accurately.

Q75. A person cannot see distant objects clearly. His vision can be corrected by using the spectacles containing: 1 Mark

- 1. Concave lenses.
- 2. Plane lenses.
- 3. Contact lenses.
- 4. Convex lenses.

Ans: 1. Concave lenses.

Explanation:

Concave lenses are used to correct the defect of vision and enable the person to see distant objects clearly.

Q76. After testing the eyes of a child, the optician has prescribed the following lenses for his spectacles:

1 Mark

1 Mark

1 Mark

Left eye: +2.00D

Right eye: +2.25D

The child is suffering from the defect of vision called:

1. Short-sightedness.

- 2. Long-sightedness.
- 3. Cataract.
- 4. Presbyopia.

Ans: 2. Long-sightedness.

Explanation:

The optician has prescribed convex lenses for the child's spectacles, because a convex lens is used to increase the converging power of the eye lens. This shows that the child is suffering from the defect of vision called long-sightedness.

Q77. The size of the pupil of the eye is adjusted by:

- 1. Cornea.
- 2. Ciliary muscles.
- 3. Optic nerve.
- 4. Iris.

Ans: 4. Iris.

Explanation:

The iris controls the size of the pupil.

Q78. The defect of vision which cannot be corrected by using spectacles is:

- 1. Myopia.
- 2. Presbyopia.
- 3. Cataract.
- 4. Hypermetropia.

Ans: 3. Cataract.

Explanation:

Cataract is the defect of vision that cannot be corrected by using spectacles. It requires surgical intervention.

Q79. A person cannot see distinctly objects kept beyond 2m. This defect can be corrected by using a lens of power:

1 Mark

1 Mark

- 1. +0.5D
- 2. -0.5D
- 3. +0.2D
- 4. -0.2D

Ans: 2. -0.5D

Explanation: This person is suffering from myopia. He needs a concave lens and hence power would be in negative. $P = \frac{1}{f} = \frac{1}{2m} = 0.5D$

Q80. A near sighted person wears eye glass of power 5.5D for distant vision. His doctor prescribes a correction of +ID in near vision part of his bifocals, which is measured relative to the main part of the lens. Then, the focal length of his near vision part of the lens is.

- 2. -20cm 3. -22.22cm 4. + 20.22cm Ans: 3. -22.22cm **Explanation**: It is given that Power of Lens, P = 5.5 DNow, since this lens is used for Myopic Eye, so it will be concave lens and hence the sign will be negative. So P = - 5.5 D Now, for near vision power is to be increased by + 1 D. Therefore, Power = -5.5 D + 1 D = -4.5 D Now, we know, $\mathrm{P}=rac{1}{\mathrm{f}}$ $= \frac{1}{p} \\ = \frac{1}{4.5}$ = -22.22cm Hence, Option C is correct.
- Q81. The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance 1 Mark because among all other colours, the red light:
 - 1. Is scattered the most by smoke or fog.
 - 2. Is scattered the least by smoke or fog.
 - 3. Is absorbed the most by smoke or fog.
 - 4. Moves fastest in air.

1. -18.18cm

Ans: 2. Is scattered the least by smoke or fog.

Explanation: Red colour is scattered the least by smoke or fog due to its largest wavelength.

Q82. In given figure, a light ray AB is incident normally on one face PQ of an equilateral glass prism. Find out the angles 1 Mark at faces PQ and PR.

Find out the angles at faces PQ and PR.



Ans: 1. 60°

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Explanation:
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Angle of incidence, i = 0^{\circ}
Angle of refraction, r = sin(i) \times n
Where n = refractive index
So, r_1 = 0^\circ Where,
r_1 = angle of refraction at
PQ r_2 = angle of incidence from inside on side
PR A = angle of prism
We know that A = r_1 + r_2
r_2 = A - r_1
= 60^{\circ} - 0^{\circ}
= 60°
```

Q83. The animals of prey have:

1. Two eyes at the front.

2. Two eyes at the back.

3. Two eyes on the sides.

4. One eye at the front and one on the side.

Ans: 3. Two eyes on the sides.

Explanation:

Animals of prey have two eyes on the sides of their head. This gives them a wide field of view and allows them to see the approach of potential predators.

- Q84. A man driving a car can read a distant road sign clearly but finds difficulty in reading the odometer on 1 Mark the dashboard of the car. Which of the following statement is correct about this man.
 - 1. The near point of his eyes has receded away.
 - 2. The near point of his eyes has come closer to him.
 - 3. The far point of his eyes has receded away.
 - 4. The far point of his eyes has come closer to him.

Ans: 1. The near point of his eyes has receded.

Explanation:

If a man driving a car can see a distant road sign distinctly but cannot read the odometer on the dashboard of the car clearly, it suggests that the near point of his eyes has receded.

- Q85. The splitting up of white light into seven colours on passing through a glass prism is called: 1 Mark
 - 1. Refraction.
 - 2. Deflection.
 - 3. Dispersion.
 - 4. Scattering.

Ans: 3. Dispersion.

Explanation:

The splitting of white light into seven colours on passing through a glass prism is called dispersion.

- Q86. The animal which does not have eyes that look sideways is:
 - 1. Horse.
 - 2. Chicken.
 - 3. Lion.
 - 4. Fish.

Ans: 3. Lion.

Explanation:

A lion does not have eyes that face sideways.

Q87. Which of the following colour of white light has the least wavelength?

- 1. Red.
- 2. Orange.

3. Violet.

4. Blue.

Ans: 3. Violet.

Explanation:

Violet is the colour of white light that has the least wavelength.

Q88. Advanced sunrise and delayed sunset is due to ______ of sunlight:

- 1. Atmospheric refraction.
- 2. Atmospheric dispersion.
- 3. Internal reflection.
- 4. Scattering.

Ans: 1. Atmospheric refraction.

Explanation:

Advanced sunrise and delayed sunset. The sunrise is advanced due to atmospheric refraction of sunlight. An observer on the earth sees the sun two minutes before the sun reaches the horizon.

- Q89. 1.54 is combined with another prism p₂ made from glass of refractive index 1.92 to produce dispersion without 1 Mark deviation. Then the angle of prism P₂ is
 - 1. 2.3°
 - 2. 4.3°
 - 3. 3.2°
 - 4. 2.0°

Ans: 2. 4.3°

Explanation:

The angle of deviation for a prism the is given by

 $\Delta = (\mathrm{n}-1) imes \mathrm{A}$

Where, n = refractive index of prism

A = angle of prism

Given: The two prisms when combined produce dispersion without deviation. Conclusion: For no deviation for the two prism the deviation caused by two prism should be opposite to each other.

$$egin{aligned} &(\mathrm{n}1-1) imes \mathrm{A}_1 = (\mathrm{n}_2-1) imes \mathrm{A}_2\ \mathrm{A}_2 &= rac{(\mathrm{n}1-1) imes \mathrm{A}_1}{\mathrm{A}}\ \mathrm{A}_2 &= rac{(\mathrm{n}1-1) imes \mathrm{A}_1}{(\mathrm{n}2-1)}\ \mathrm{A}2 &= 4.3^\circ \end{aligned}$$

Q90. Twinkling of stars is due to atmospheric:

1. Dispersion of light by water droplets.

2. Refraction of light by different layers of varying refractive indices.

3. Scattering of light by dust particles.

4. Internal reflection of light by clouds.

Ans: 2. Refraction of light by different layers of varying refractive indices.

Explanation: The twinkling of a star is due to atmospheric refraction of light of stars.

Q91. The change in focal length of an eye-lens is caused by the action of the:

1. Pupil.

2. Retina.

3. Ciliary muscles.

4. Iris.

Ans: 3. Ciliary muscles.

Explanation:

The ciliary muscles change the focal length of the eye lens by changing its shape.

Q92. Which of the following statement is correct?

1. A person with myopia can see distant objects clearly.

2. A person with hypermetropia can see nearby objects clearly.

3. A person with myopia can see nearby objects minutes before act clearly.

4. A person with hypermetropia cannot see distant objects clearly.

Ans: 3. A person with myopia can see nearby objects minutes before act clearly. Explanation:

Nearsightedness, or myopia is inability to see the far located objects clearly.

1 Mark