

REVISION TEST -01

Total Marks -30

Class - 12 Physics (Ray Optics and optical Instruments)

Multiple Choice Questions

5 X1 =5

- An object is placed at a distance of 10 cm from a co-axial combination of two lenses A and B in contact. The combination forms a real image three times the size of the object. If lens B is concave with a focal length of 30 cm, what is the nature and focal length of lens A?
 - Convex, 12 cm
 - Convex, 6 cm
 - Concave, 12 cm
 - Convex, 18 cm
- Refraction is
 - Change of direction of propagation of light at the interface of two media as light passes from one medium to another
 - None of these
 - The change in frequency of light
 - Reversal of direction of propagation of light at the interface of two media as light passes from one medium to another
- Blue colour of clear sky is due to phenomenon of:
 - Reflection
 - Scattering
 - Refraction
 - Dispersion
- A plano-convex lens acts like a concave mirror of 28 cm focal length when its plane surface is silvered and like a concave mirror of 10 cm focal length when its curved surface is silvered. What is the refractive index of the material of the lens?
 - 1.65
 - 1.60
 - 1.55
 - 1.50
- According to Snell's law
 - The ratio of the sine of the angle of incidence to the sine of angle of refraction is

constant

- b. The ratio of the cosine of the angle of incidence to the cosine of angle of refraction is constant
- c. The ratio of the angle of incidence to the angle of refraction is constant
- d. The ratio of the tangent of the angle of incidence to the tangent of angle of refraction is constant

Short Type Questions -1

4 x2 =8

- 6. If a telescope is inverted, will it be able to work as a microscope?
- 7. Magnifying power of a simple microscope is inversely proportional to the focal length of the lens. What then stops us from using a convex lens of smaller and smaller focal length and achieving greater and greater magnifying power?
- 8. Which of the two main parts of an optical fibre has a higher value of refractive index?
- 9. What is the magnification produced by a single convex lens used as a simple microscope in normal use?

Short Type Questions -2

3 x3 =9

- 10. A tank is filled with water to a height of 12.5 cm. The apparent depth of a needle lying at the bottom of the tank is measured by a microscope to be 9.4 cm. What is the refractive index of water? If water is replaced by a liquid of refractive index 1.63 up to the same height, by what distance would the microscope have to be moved to focus on the needle agains?
- 11. A person with a normal near point (25 cm) using a compound microscope with objective of focal length 8.0 mm and an eye piece of focal length 2.5 cm can bring an object placed 9.0 mm from the objective in sharp focus. What is the separation between the two lenses? Calculate the magnifying power of the microscope.
- 12. A prism is made of glass of unknown refractive index. A parallel beam of light is incident on a face of the prism. The angle of minimum deviation is measured to be 40° . What is the refractive index of the material of the prism? The refracting angle of

the prism is 60° . If the prism is placed in water predict the new angle of minimum deviation of a parallel beam of light.

Long Type Questions -2

2 x4 =8

13. A prism of refractive index of $\sqrt{2}$ has a refracting angle of 60° . At what angle must a ray be incident on it so that it suffers a minimum deviation?
14. Two convex lenses A and B of focal lengths 20 cm and 10 cm are placed coaxially 10 cm apart. An object is placed on the common axis at a distance of 10 cm from lens A. Find the position and magnification of the final image.

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deviation of a parallel beam of light.

15. A prism of refractive index of $\sqrt{2}$ has a refracting angle of 60° . At what angle must a ray be incident on it so that it suffers a minimum deviation?
16. Two convex lenses A and B of focal lengths 20 cm and 10 cm are placed coaxially 10 cm apart. An object is placed on the common axis at a distance of 10 cm from lens A. Find the position and magnification of the final image.

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