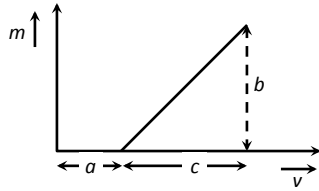


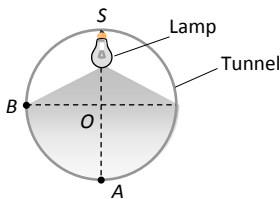
Topic :- RAY OPTICS AND OPTICAL INSTRUMENTS

- Line spectrum contains information about
 - The atoms of the prism
 - The atoms of the source
 - The molecules of the source
 - The atoms as well as molecules of the source
- Convergence of concave mirror can be decreased by dipping in
 - Water
 - Oil
 - Both
 - None of these
- Two thin lenses, one of focal length $+60\text{ cm}$ and the other of focal length -20 cm are put in contact. The combined focal length is
 - $+15\text{ cm}$
 - -15 cm
 - $+30\text{ cm}$
 - -30 cm
- A spherical mirror forms an image of magnification 3. The object distance, if focal length of mirror is 24 cm , may be
 - 32 cm , 24 cm
 - 32 cm , 16 cm
 - 32 cm only
 - 16 cm only
- A candle is placed before a thick plane mirror. When looked obliquely in the mirror, a number of images are seen from the surfaces of the plane mirror. Then
 - first image is brightest
 - second image is brightest
 - third image is brightest
 - all images beyond second are brightest
- A square wire of side 1 cm is placed perpendicular to the principle axis of a concave mirror of focal length 15 cm at a distance of 20 cm . The area enclosed by the image of the wire is
 - 4 cm^2
 - 6 cm^2
 - 2 cm^2
 - 9 cm^2
- When an object is kept at a distance of 30 cm from a concave mirror, the image is formed at a distance of 10 cm . If the object is moved with a speed of 9 ms^{-1} , the speed with which images moved is
 - 0.1 ms^{-1}
 - 1 ms^{-1}
 - 3 ms^{-1}
 - 9 ms^{-1}
- A convex mirror forms an image one-fourth the size of the object. If object is at a distance of 0.5 m from the mirror, the focal length of mirror is
 - 0.17 m
 - -1.5 m
 - 0.4 m
 - -0.4 m
- The wavelength of light in two liquids 'x' and 'y' is 3500 \AA and 7000 \AA , then the critical angle of x relative to y will be
 - 60°
 - 45°
 - 30°
 - 15°

10. The graph shows how the magnification m produced by a convex thin lens varies with image distance v . What was the focal length of the used lines



- a) b/c b) b/ca c) bc/a d) c/b
11. The aperture of the objective lens of a telescope is made large so as to
- a) Increase the resolving power of the telescope
 b) Increase the magnifying power of the telescope
 c) To focus on distant objects
 d) Make image aberrationless
12. In a movie hall, the distance between the projector and the screen is increased by 1% illuminates on the screen is
- a) Increased by 1% b) Decreased by 1% c) Increased by 2% d) Decreased by 2%
13. Pick the correct statement from the following
- a) Primary rainbow is a virtual image and secondary rainbow is a real image
 b) Primary rainbow is a real image and secondary rainbow is a virtual image
 c) Both primary and secondary rainbows are virtual images
 d) Both primary and secondary rainbows are real images
14. An electric lamp is fixed at the ceiling of a circular tunnel as shown in figure. What is the ratio the intensities of light at base A and a point B on the wall



- a) 1 : 2 b) $2 : \sqrt{3}$ c) $\sqrt{3} : 1$ d) $1 : \sqrt{2}$
15. Refractive index of air is 1.0003. The correct thickness of air column which will have one more wavelength of yellow light (6000 \AA) than in the same thickness in vacuum is
- a) 2 mm b) 2 cm c) 2 m d) 2 km
16. A camera objective has an aperture diameter d . If the aperture is reduced to diameter $d/2$, the exposure time under identical conditions of light should be made
- a) $\sqrt{2}$ fold b) 2 fold c) $2\sqrt{2}$ fold d) 4 fold
17. A glass lens is placed in a medium in which it is found to behave like a glass plate. Refractive index of the medium will be
- a) Greater than the refractive index of glass
 b) Smaller than the refractive index of glass
 c) Equal to refractive index of glass
 d) No case will be possible from above

18. A double convex lens ($R_1 = R_2 = 100 \text{ cm}$) having focal length equal to the focal length of a concave mirror. The radius of the concave mirror is
a) 10 cm b) 20 cm c) 40 cm d) 15 cm
19. A candle placed 25 cm from a lens, forms an image on a screen placed 75 cm on the other end of the lens. The focal length and type of the lens should be
a) +18.75 cm and convex lens b) -18.75 cm and concave lens
c) +20.25 cm and convex lens d) -20.25 cm and concave lens
20. If sound travelling at 340 ms^{-1} enters water where its speed becomes 1480 ms^{-1} , then critical angle for total internal reflection is
a) 13.3° b) 89.7° c) 86.7° d) 10.3°

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