

PHYSICS

41. The reddish appearance of the sun at sunrise and sunset is due to
- (1) the colour of the sky
 - (2) the scattering of light
 - (3) the polarisation of light
 - (4) the colour of the sun
42. A convex lens is dipped in a liquid whose refractive index is equal to the refractive index of the lens. Then its focal length will
- (a) remain unchanged
 - (b) become zero
 - (c) become infinite
 - (d) become small, but non-zero
43. A convex lens and a concave lens, each having same focal length of 25 cm, are put in contact to form a combination of lenses. The power in diopters of the combination is
- (1) 50
 - (2) infinite
 - (3) zero
 - (4) 25
44. If a small amount of antimony is added to germanium crystal
- (1) it becomes a p-type semiconductor
 - (2) the antimony becomes an acceptor atom
 - (3) there will be more free electrons than holes in the semiconductor
 - (4) its resistance is increased
45. In total internal reflection when the angle of incidence is equal to the critical angle for the pair of media in contact, what will be angle of refraction?
- (1) 180°
 - (2) 0°
 - (3) equal to angle of incidence
 - (4) 90°
46. Wavefront is the locus of all points, where the particles of the medium vibrate with the same
- (1) phase
 - (2) amplitude
 - (3) frequency
 - (4) period
47. Light from two coherent sources of the same amplitude A and wavelength λ illuminates the screen. The intensity of the central maximum is I_0 . If the sources were incoherent, the intensity at the same point will be
- (1) $4I_0$
 - (2) $2I_0$
 - (3) I_0
 - (4) $\frac{I_0}{2}$
48. If Young's double slit experiment is performed in water keeping the rest of the set-up same, the fringes will
- (1) increase in width
 - (2) decrease in width
 - (3) remain unchanged
 - (4) not be formed
49. The maximum number of possible interference maxima for slit-separation equal to twice the wavelength in Young's double-slit experiment is
- (1) three
 - (2) five
 - (3) infinite
 - (4) zero
50. A double slit arrangement produces fringes for $\lambda = 5890 \text{ \AA}$ that are 0.4° apart. What is the angular width if the entire arrangement is immersed in water? $\left(\mu_w = \frac{4}{3}\right)$
- (1) 0.3°
 - (2) 2.3°
 - (3) 0.8°
 - (4) 1.3°