Q.1 Two transparent media of refractive indices μ_1 and μ_3 have a solid lens shaped transparent media of refractive index μ_2 between them as shown in figure. The correct relation between refractive indices is.



Q.2 At what distance the image for the converging beam after refraction through the curved surface will be formed?



Q.3 Refractive index of the medium on the left and right side of the spherical surface are 1 and 1.5respectively. For the arrangement of object and spherical refracting surface as shown in figure, the position of image will be.



Q.4 A parallel narrow beam of light is incident on the surface of a transparent hemisphere of radius R and refractive index $\mu = 1.5$ as shown. The position of the image formed by refraction at the spherical surface only is



- Q.5 The human eye can be regarded as a single spherical refractive surface having curvature of cornea 7.8 mm. If a parallel beam of light comes to focus at 3.075 cm behind the refractive surface, the refractive index of the eye is(D)1.24 (D)1.72 (D)1.61
 - **(A)**1.34 **(B)**1.72 **(C)**1.5 **(D)**1.61

Q.6 A plastic hemisphere has a radius of curvature of 8 cm and a refraction index of 1.6. On the axis halfway between the plane surface and the spherical one (4 cm from each) is a small objectO. The distance between the two images when viewed along the axis from the two sides of the hemisphere is approximately



Q.7 A transparent cylinder has its right half polished so as to act as a mirror. A paraxial light ray incident from left, that is parallel to the principal axis, exits parallel to the incident ray as shown. The refractive index n of the material of the cylinder is



- **Q.8** A clear transparent glass sphere ($\mu = 1.5$) of radius R is immersed in a liquid of refractive index 1.25. A parallel beam of light incident on it will converge to a point. The position of this point measured from the centre of the sphere will be **(A)**– 3R **(B)**+ 3R **(C)**– R **(D)**+ R
- **Q.9** As shown in the figure, region BCDEF and ABFG are of refractive index 2.0 and 1.5 respectively. A particle 0 is kept at the mid of DH. Image of the object as seen by the eye is at a distance



Q.10 Locate the image of the point object O in the situation shown in the figure. The point C denotes the centre of curvature of the refracting surface.



ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10
Sol.	(B)	(A)	(B)	(B)	(A)	(D)	(D)	(B)	(A)	(A)