Q.1 Lateral displacement of the emergent ray of light through a glass slab increases with [Assume, incident and emergent angles are very small]
(A)Increase in angle of incidence   (B)Decrease in refractive index of glass slab
(C)Increase in the wavelength of light   (D)Decrease in thickness of slab.

Q.2 Parallel side glass slab of thickness 8 cm is made of a material of refractive index $\sqrt{3}$. When light is incident on one of the parallel faces at an angle of 60° with the normal to the surface and emerges from other parallel face, find the lateral displacement of the emergent ray.
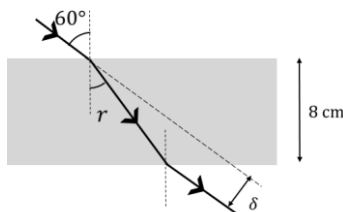

(A)$\frac{4}{\sqrt{3}}$ cm   (B)$\sqrt{3}$ cm   (C)$\frac{8}{\sqrt{3}}$ cm   (D)$8\sqrt{3}$ cm

Q.3 A glass slab of thickness 3 cm and refractive index $(\mu_g) = \frac{3}{2}$ is placed in front of a concave mirror as shown in figure. At what distance the final image will be formed from the mirror?
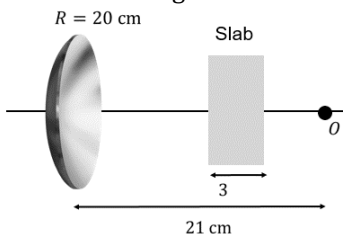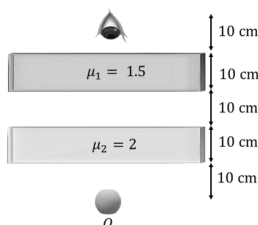

(A)18 cm   (B)21cm   (C)20cm   (D)15cm

Q.4 An object is seen through a glass slab of thickness 36 cm and refractive index 3/2. If the system of object, observer and the glass slab is dipped in the water($\mu = 4/3$) keeping all the distances fixed, then the shift produced by the glass slab will be:
(A)12 cm   (B)4cm   (C)6cm   (D)8cm

Q.5 A point object O is placed in front of a concave mirror of focal length 10 cm as shown in the figure. A glass slab of refractive index $\mu = \frac{3}{2}$ and thickness 6 cm is inserted between object and mirror. Find the position of final image when the distance between mirror and slab is 5 cm.
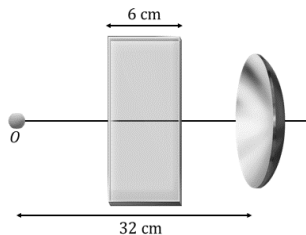

(A)17 cm from the mirror   (B)15 cm from the mirror
(C)16 cm from the mirror   (D)12 cm from the mirror

Q.6 A glass slab ($\mu = 1.5$) and thickness of 15 cm is placed in front of a convex mirror as shown in figure. The distance between the actual position of pole and image as seen by the observer will be:
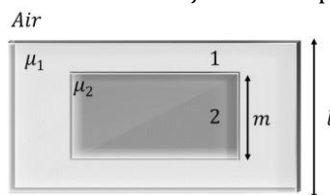(A)9 cm   (B)25cm   (C)15cm   (D)18cm

f = 40 cm
μ = 1.5
20 cm   15 cm   10 cm
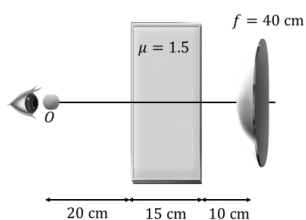
Q.7   At what distance eye 'E' will observe the fourth image (after four refractions from plane surfaces) of object 'O' from itself?

10 cm
$\mu_1 = 1.5$ 10 cm
10 cm
$\mu_2 = 2$ 10 cm
10 cm

(A)$\frac{25}{3}$ cm   (B)$\frac{50}{3}$ cm   (C)$\frac{125}{3}$ cm   (D)$\frac{100}{9}$ cm
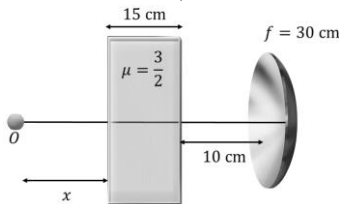
Q.8   A ray of light is incident on a glass plate. The light ray travelsdistance of 5 cm inside the glass plate before emerging out ofthe glass plate. If the incident ray suffers a deviation of 30°,the perpendicular distance between incident and the emergent ray is.

(A)5 cm   (B)2.5cm   (C)7.5cm   (D)10cm
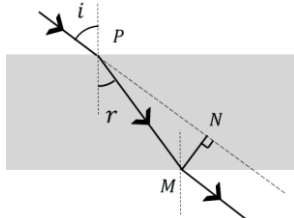
Q.9   In a glass slab of thickness 'l' and refractive index μ_1, a cuboidal cavity of thickness 'm' is carved and filled with a liquid of refractive index μ_2 ($\mu_1 > \mu_2$). It has been found that shift produced by the given slab is zero when an observer 'A' observes an object B with paraxial rays is

Air
μ_1 1
μ_2
2   *m*   *l*

(A)$\frac{\mu_1-\mu_2}{u_2-1}$ (B)$\frac{\mu_1-\mu_2}{u_2(u_1-1)}$ (C)$\frac{\mu_1-\mu_2}{u_1-1}$ (D)$\frac{\mu_1-\mu_2}{u_1(u_2-1)}$

Q.10   A glass slab ($\mu = \frac{3}{2}$) is placed in front of a concave mirror as shown in the figure. At what distance x should an object be placed to the left of the slab, such that the final image forms onobject itself

15 cm
$\mu = \frac{3}{2}$ *f* = 30 cm
O
10 cm
x

(A)x = 10 cm   (B)x = 15 cm   (C)x = 40 cm   (D)x = 30 cm

ANSWER KEY

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