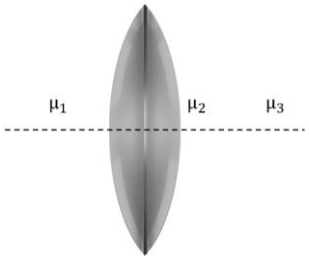
Q.1 A concave lens has been placed in an optically rarer medium. The lens will behave like

(A) Converging lens **(B)** Diverging lens

(C) It will lose property of lens **(D)** Concave mirror

Q.2 The figure shows an equi-convex lens. What should be the condition of the refractive indices so that the lens becomes diverging?



(A) $2\mu_3 > \mu_1 - \mu_2$ **(B)** $2\mu_2 > \mu_1 + \mu_3$ **(C)** $2\mu_2 > 2\mu_1 - \mu_2$ **(D)** None of these.

Q.3 A lens of refractive index μ is put in a liquid of refractive index μ′. If the focal length of lens in air is f, then its focal length in liquid will be

(A) $\frac{-f\mu'(\mu-1)}{(\mu'-\mu)}$ **(B)** $\frac{-f(\mu'-\mu)}{\mu'(\mu-1)}$ **(C)** $\frac{-\mu'(\mu-1)}{f(\mu'-\mu)}$ **(D)** $\frac{f\mu'\mu}{(\mu-\mu')}$

Q.4 The focal lengths of a lens are in the ratio $8:3$ when it is immersed in two different liquids of refractive indices 1.6 and 1.2 respectively. The refractive index of the material of the lens is

(A) 1.25 **(B)** 1.5 **(C)** 1.8 **(D)** 2

Q.5 The second focus is negative for which of the following lens ?

(A) Convex lens **(B)** Concave lens

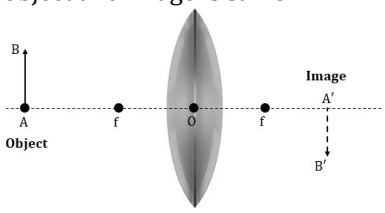
(C) Plano convex lens **(D)** Can't say.

Q.6 A virtual, erect and magnified image is formed between F1 and 2F1 of a convex lens. The position of object should be

(A) Between F_1 and $2F_1$ **(B)** Between optical centre and F_1

(C) Between $-\infty$ and $2F_1$ **(D)** At F_1

Q.7 For the diagram shown below, identify the correct statement regarding object (AB), lens and image (A'B'). Assume that the size of object and image is same.



(A) Point B, its image B' and optical centre (0) of the lens are collinear.

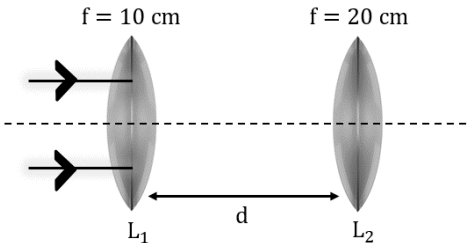
(B) Point B, its image B' and optical centre (0) of the lens are non- collinear.

(C) B' is the point on the virtual image of the object.

(D) The radius of curvature of spherical surface of lens are not equal.

Q.8 The arrangement of two converging lenses is shown in the figure. The incident rays are parallel to the principal axis. What should be the value of d so that a final real image of object is formed at infinity?

(A) 10 cm **(B)** 30 cm **(C)** 25cm **(D)** 50cm



Q.9 A biconvex lens $\left(\mu = \frac{3}{2}\right)$ has a radius of curvature of magnitude 20 cm. Which one of the following options best describe the image formed of an object of height 2 cm placed 30 cm from the lens?

(A) Virtual, upright, height $= 1$ cm **(B)**Virtual, upright, height $= 0.5$ cm

(C) Real, inverted, height $= 4$ cm **(D)**Real, inverted, height $= 1$ cm

Q.10 Optic axis of a thin equi-convex lens is the $x-$ axis .The co-ordinates of a point object and its image are $(-40\text{ cm}, 1\text{ cm})$ and $(50\text{ cm}, -2\text{ cm})$ respectively. Lens is located at[Assume, lens is constrained to move only on $x-$ axis]

(A)$x + 20$ cm **(B)**$x = -30$ cm **(C)**$x = -10$ cm **(D)**Origin

Q.11 An image I is formed of a point object O by a lens whose optic axis is AB as shown in the figure.

(A) Concave lens **(B)** Convex lens

(C) Plane Concave lens **(D)** Concave meniscus

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10	11
Sol.	(B)	(B)	(A)	(D)	(B)	(B)	(A)	(B)	(C)	(C)	(B)