

NEET RAY OPTICS AND OPTICAL INSTRUMENTS — POWER AND COMBINATION OF THIN LENSES — PYQS

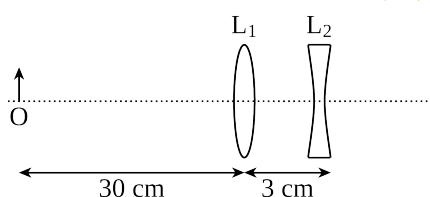
Max. Marks: 56

Questions: 14

Section A (MCQ) — 14 questions

- Q.1** The lens combination as shown in the figure, consists of two lenses, L_1 and L_2 , of the focal lengths $+10$ cm and -10 cm, respectively. The position of the image formed is:

[RE-NEET (UG) 2026]



- (1) 60 cm to the right of the concave lens
 (2) 20 cm to the left of the concave lens
 (3) 60 cm to the left of the concave lens
 (4) 30 cm to the right of the concave lens

Scan or tap for the full solution



- Q.2** In a certain camera, a combination of four similar thin convex lenses are arranged axially in contact. Then the power of the combination and the total magnification in comparison to the power (p) and magnification (m) for each lens will be, respectively

[NEET (UG) 2025]

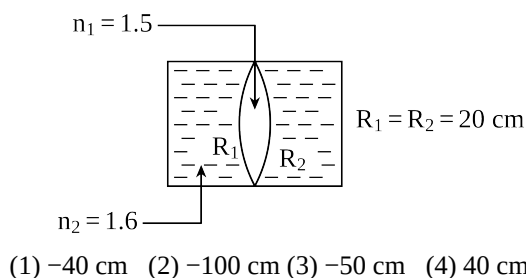
- (1) $4p$ and m^4 (2) p^4 and m^4
 (3) $4p$ and $4m$ (4) p^4 and $4m$

Scan or tap for the full solution



- Q.3** In the figure shown here, what is the equivalent focal length of the combination of lenses (Assume that all layers are thin)?

[NEET (UG) 2023]



- (1) -40 cm (2) -100 cm (3) -50 cm (4) 40 cm

Scan or tap for the full solution



- Q.4** Two thin lenses are of same focal lengths (f), but one is convex and the other one is concave. When they are placed in contact with each other, the equivalent focal length of the combination will be :

[NEET (UG) 2023]

- (1) $f/4$ (2) $f/2$ (3) Infinite (4) Zero

Scan or tap for the full solution



- Q.5** A convex lens 'A' of focal length 20 cm and a concave lens 'B' of focal length 5 cm are kept along the same axis with a distance ' d ' between them. If a parallel beam of light falling on 'A' leaves 'B' as a parallel beam, then the distance ' d ' in cm will be :

[NEET (UG) 2021]

- (1) 30 (2) 25 (3) 15 (4) 50

Scan or tap for the full solution



- Q.6** Two similar thin equi-convex lenses, of focal length f each, are kept coaxially in contact with each other such that the focal length of the combination is F_1 . When the space between the two lenses is filled with glycerin (which has the same refractive index ($\mu = 1.5$) as that of glass) then the equivalent focal length is F_2 . The ratio $F_1:F_2$ will be :

[NEET (UG) 2019]

- (1) $1:2$ (2) $2:3$ (3) $3:4$ (4) $2:1$

Scan or tap for the full solution



- Q.7** Two identical glass ($\mu_g = 3/2$) equiconvex lenses of focal length f each are kept in contact. The space between the two lenses is filled with water ($\mu_w = 4/3$). The focal length of the combination is

[NEET 2016 (Phase 2)]

- (1) $f/3$ (2) f (3) $4f/3$ (4) $3f/4$

Scan or tap for the full solution



- Q.8** Two identical thin plano-convex glass lenses (refractive index 1.5) each having radius of curvature of 20 cm are placed with their convex surfaces in contact at the centre. The intervening space is filled with oil of refractive index 1.7 . The focal length of the combination is

[AIPMT 2015 (Cancelled)]

- (1) -50 cm (2) 50 cm (3) -20 cm (4) -25 cm

Scan or tap for the
full solution



- Q.9** A plano convex lens fits exactly into a plano concave lens. Their plane surfaces are parallel to each other. If lenses are made of different materials of refractive indices μ_1 and μ_2 and R is the radius of curvature of the curved surface of the lenses, then the focal length of the combination is [NEET 2013]

- (1) $\frac{R}{(\mu_1 - \mu_2)}$ (2) $\frac{2R}{(\mu_2 - \mu_1)}$
(3) $\frac{R}{2(\mu_1 + \mu_2)}$ (4) $\frac{R}{2(\mu_1 - \mu_2)}$

Scan or tap for the
full solution



- Q.10** For a normal eye, the cornea of eye provides a converging power of 40 D and the least converging power of the eye lens behind the cornea is 20 D. Using this information, the distance between the retina and the cornea-eye lens can be estimated to be

[NEET 2013]

- (1) 1.67 cm (2) 1.5 cm (3) 5 cm (4) 2.5 cm

Scan or tap for the
full solution



- Q.11** A concave mirror of focal length f_1 is placed at a distance of d from a convex lens of focal length f_2 . A beam of light coming from infinity and falling on this convex lens – concave mirror combination returns to infinity. The distance d must equal

[AIPMT 2012 (Prelims)]

- (1) $f_1 + f_2$ (2) $-f_1 + f_2$ (3) $2f_1 + f_2$ (4) $-2f_1 + f_2$

Scan or tap for the
full solution



- Q.12** Two thin lenses of focal lengths f_1 and f_2 are in contact and coaxial. The power of the combination is

[AIPMT 2008]

- (1) $\frac{f_1 + f_2}{2}$ (2) $\frac{f_1 + f_2}{f_1 f_2}$ (3) $\sqrt{\frac{f_1}{f_2}}$ (4) $\sqrt{\frac{f_2}{f_1}}$

Scan or tap for the
full solution



- Q.13** 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 [AIPMT 2006]

- (1) zero (2) 25 (3) 50 (4) infinite.

Scan or tap for the
full solution



- Q.14** A plano-convex lens ($\mu = 1.5$) has radius of curvature 10 cm. It is silvered on its plane surface. Find focal length after silvering [AIPMT 2000]
(1) 10 cm (2) 20 cm (3) 15 cm (4) 25 cm

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	1	2	3	3	1	4	1	1	1	3
Ques.	12	13	14								
Ans.	2	1	1								