

NEET/JEE | 2024

concept of plane mirror

Ray optics (3-4 marks)

① Law of reflection



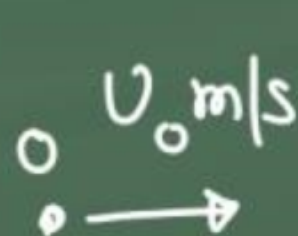
$$\angle i = \angle r$$



② deviation

$$\begin{aligned} \delta &= 180^\circ - 2i \\ &= 180 - 2 \times 60 \\ &= 180 - 120 \\ &= 60^\circ \text{ (Anti)} \end{aligned}$$

③



Ⓐ $U_I = U_0$

Ⓑ $U_I = -U_0$

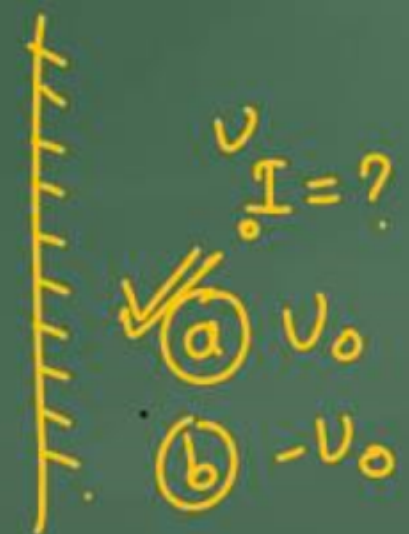
Ⓒ $U_I = -2U_0$

Ⓓ $U_I = +2U_0$



concept of plane mirror Ray optics (3-4 marks) (6)

(4) $\uparrow v_o$



v
 $I = ?$

(a) v_o (c) $+2v_o$
(b) $-v_o$ (d) $-2v_o$

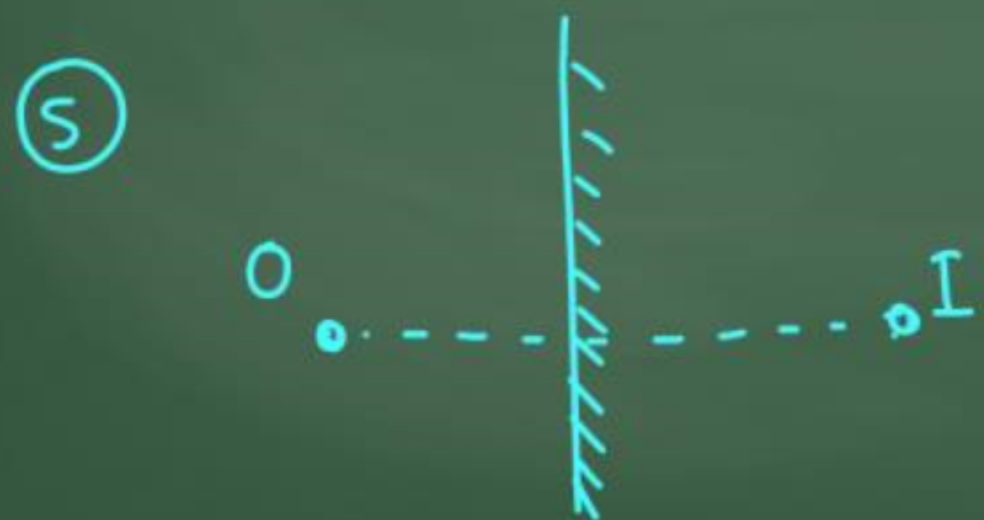
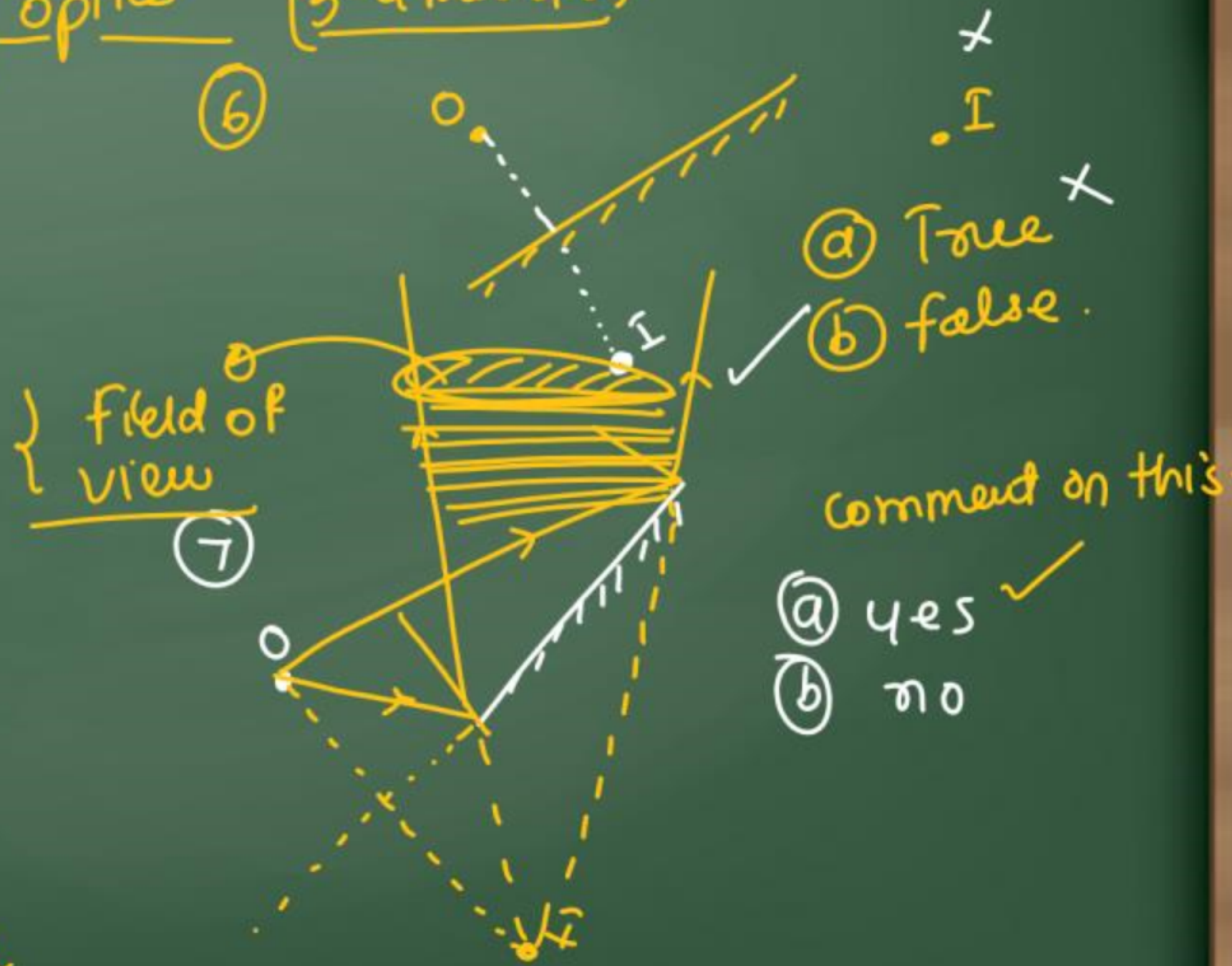


Image must be perpendicular to object always.

(7) Field of view



(a) True ✓
(b) false.

Comment on this:
(a) yes ✓
(b) no

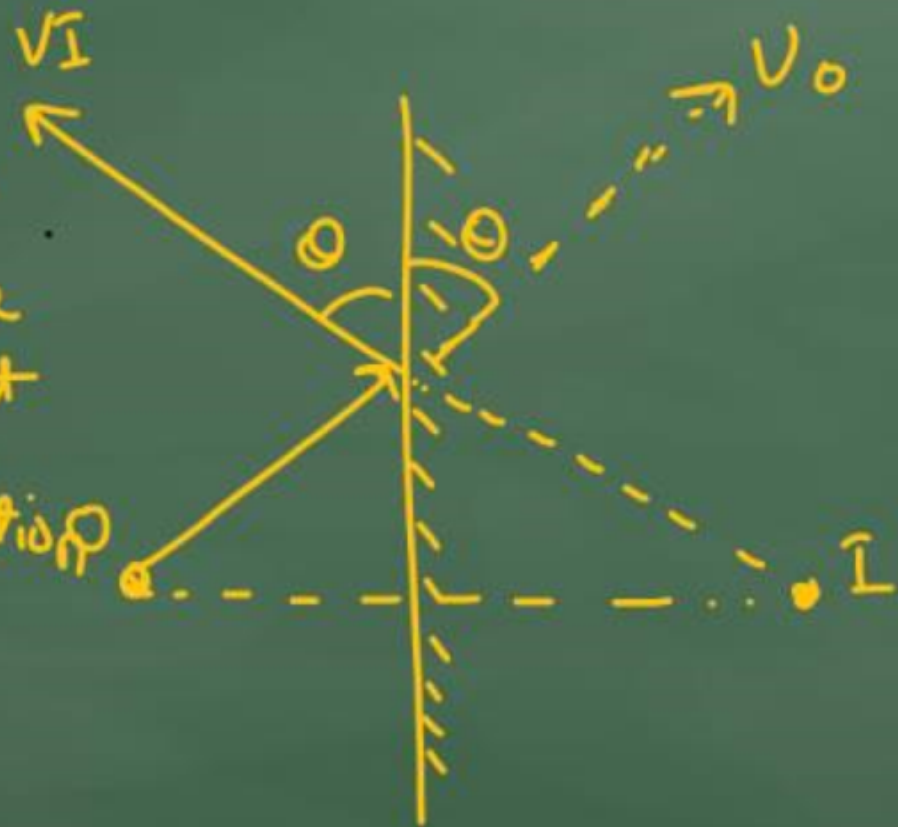
⑧ component of velocity
at 1

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concept of plane mirror Ray optics (3-4 marks)

⑧ component of velocity of image.

Image velocity will make the same angle but in opp. direction



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velocity of obj

$$= 2\hat{i} + 3\hat{j} - 3\hat{k}$$

image velocity



Ⓐ $2\hat{i} + 3\hat{j} - 3\hat{k}$

Ⓑ $-2\hat{i} - 3\hat{j} + 4\hat{k}$

Ⓒ $-2\hat{i} - 3\hat{j} - 4\hat{k}$

Ⓓ $2\hat{i} + 3\hat{j} + 3\hat{k}$

concept of plane mirror Ray optics (3-4 marks)

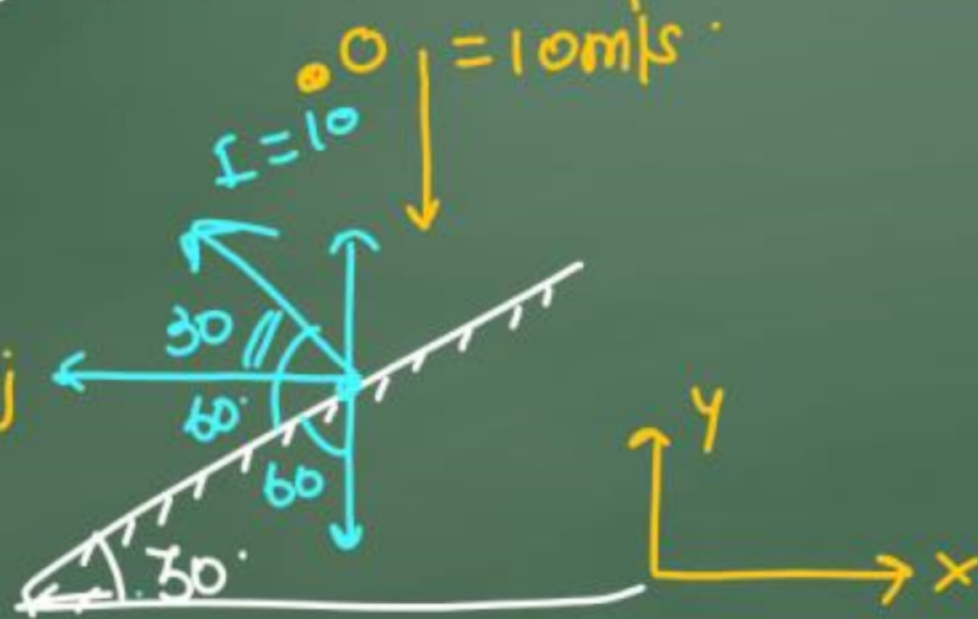
✓ (a) $-4\pi\pi$
image velocity = ?

(a) $10 \cos 30^\circ i + 10 \sin 30^\circ j$

(b) $-10 \cos 30^\circ i - 10 \sin 30^\circ j$

✓ (c) $-10 \cos 30^\circ i + 10 \sin 30^\circ j$

(d) none



$-10 \cos 30^\circ i + 10 \sin 30^\circ j$

concept of plane mirror

10 Reflected rays shifting

(a) θ in same

(b) 2θ in same

(c) θ in opp.

(d) 2θ in opp.



Ray optics

(3-4 marks)

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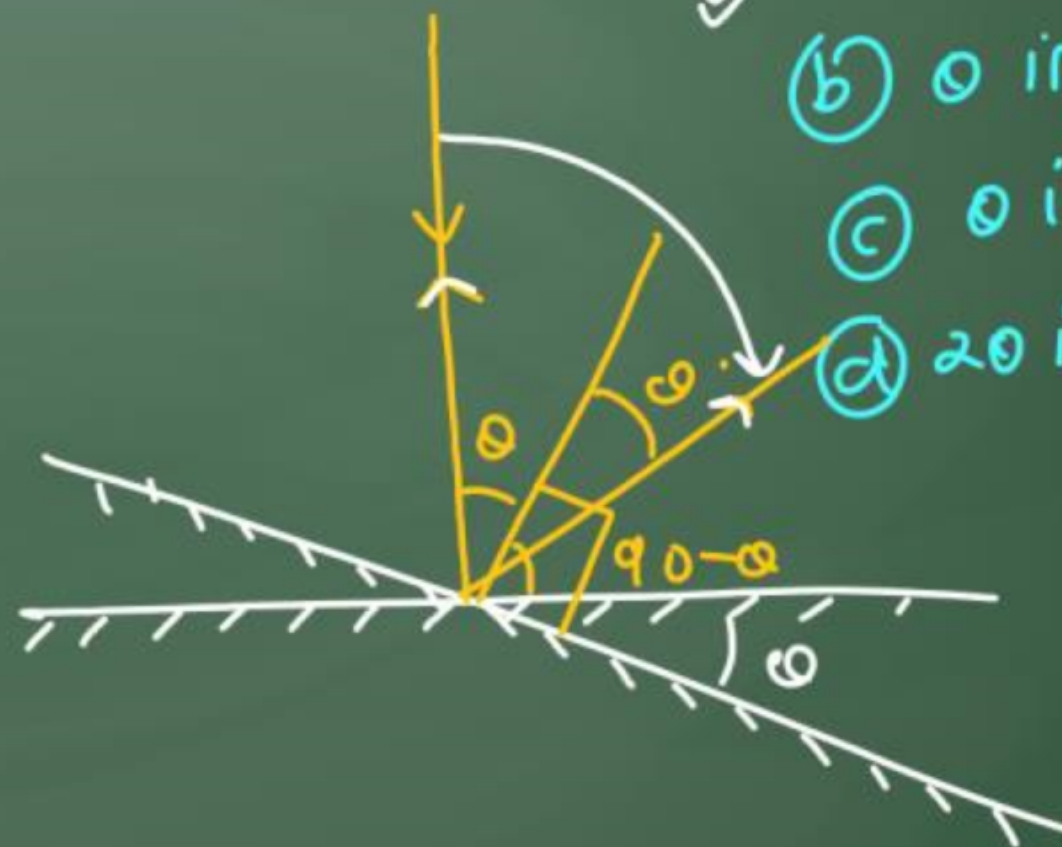
Reflected rays shifting

(a) 2θ in same

(b) θ in same

(c) θ in opp.

(d) 2θ in opp.



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concept of plane mirror Ray optics (3-4 marks)

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num of image = ?

(a) $\frac{360}{\theta} = m = \text{even}$

num of im = $m - 1$

(b) $\frac{360}{\theta} = m = \text{odd}$

bisector

$n = \text{imag} = (m - 1)$

not on bisector

$n = m$

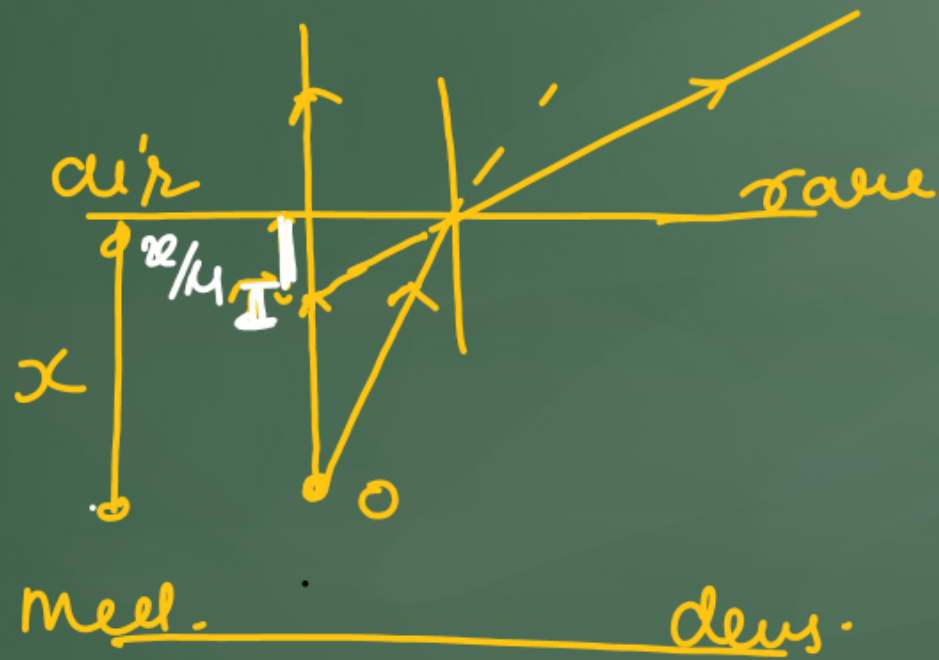
Ray optics.

day-2

concept of app. depth & shift

NEET/JEE 2024. [3 question
4 marks]

(12)



Rare → Dens → R → O

OR O

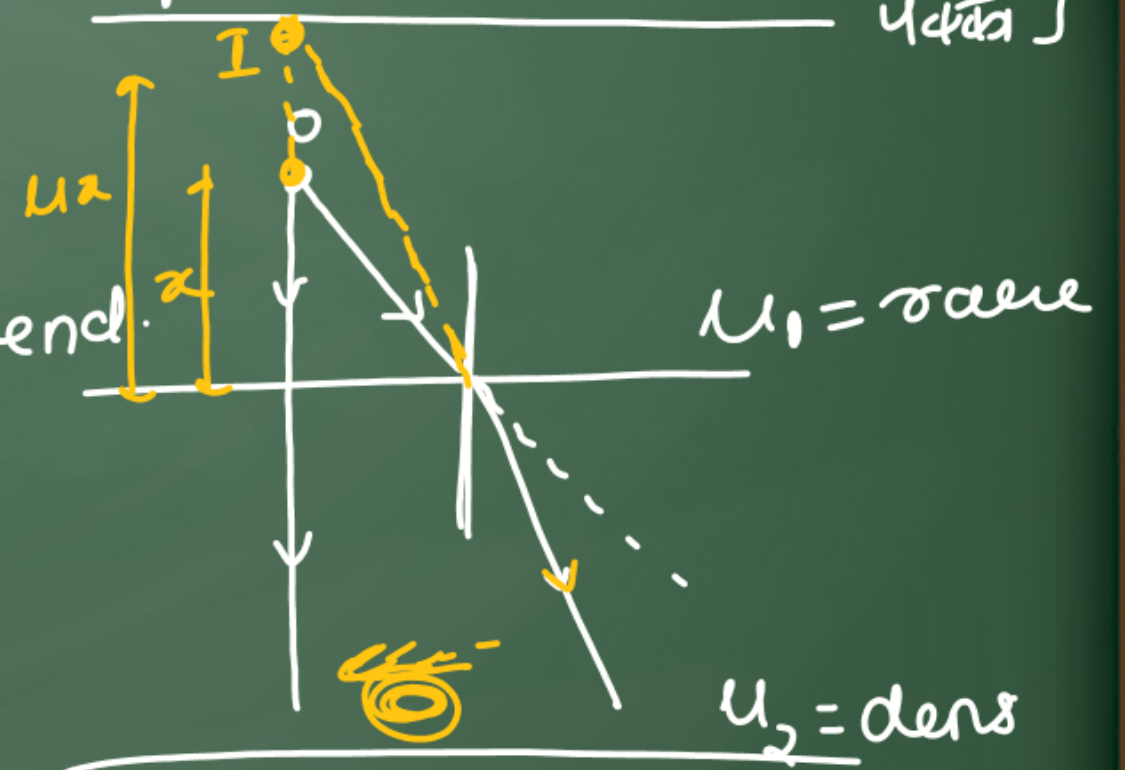
$$\rightarrow \frac{\mu_2}{\mu_1} = \frac{h_o}{h_i} \rightarrow h_i = \frac{h_o \mu_1}{\mu_2}$$

$$h_i = \frac{h_o}{\mu} = \frac{x}{\mu}$$

(13)

R-O-B

Rare → dens → Bend.



R O I

$$\frac{\mu_2}{\mu_1} = \frac{h_i}{h_o} \Rightarrow h_i = \frac{\mu_2 h_o}{\mu_1}$$

$$= \mu x$$

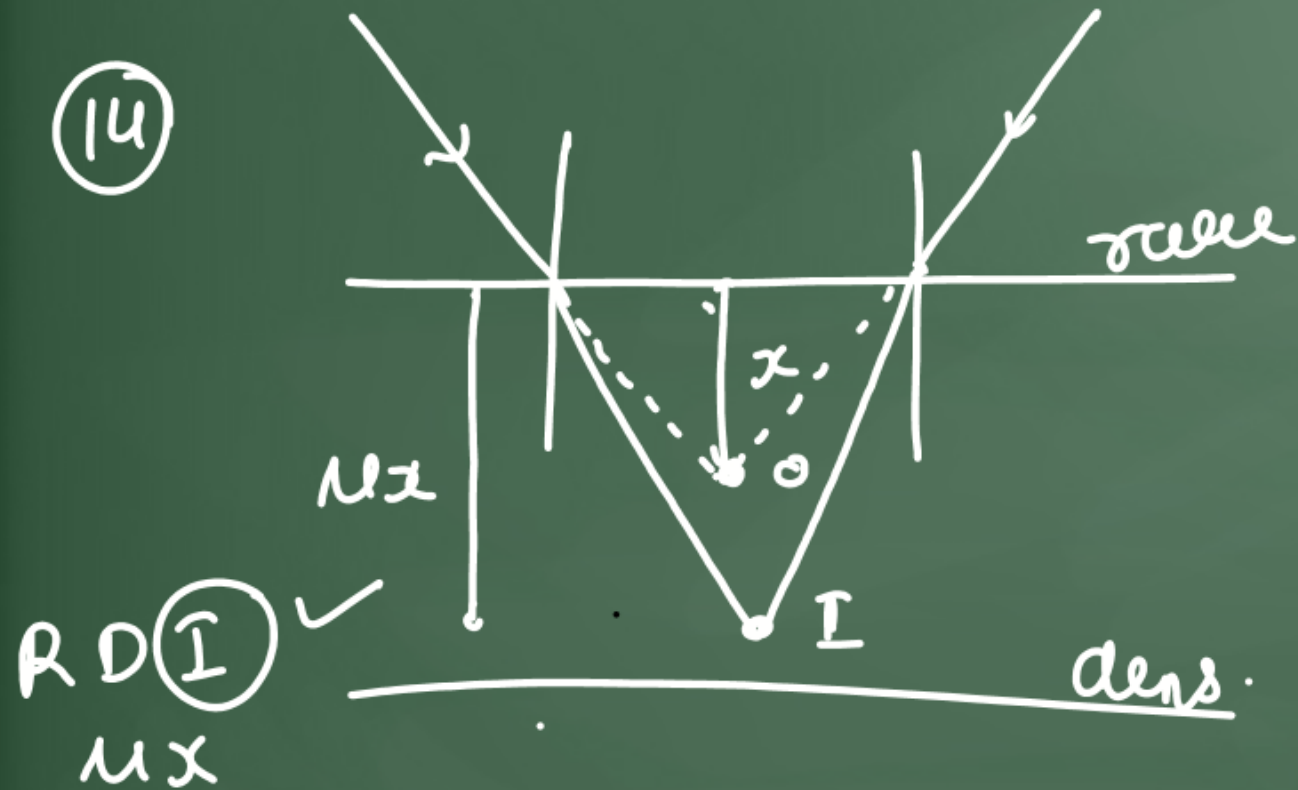
Ray optics.

day-2

concept of app. depth & shift

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4 marks]

(14)



(15)



Ray optics.

day-2

concept of app. depth & shift

NEET/JEE 2024. [3 question
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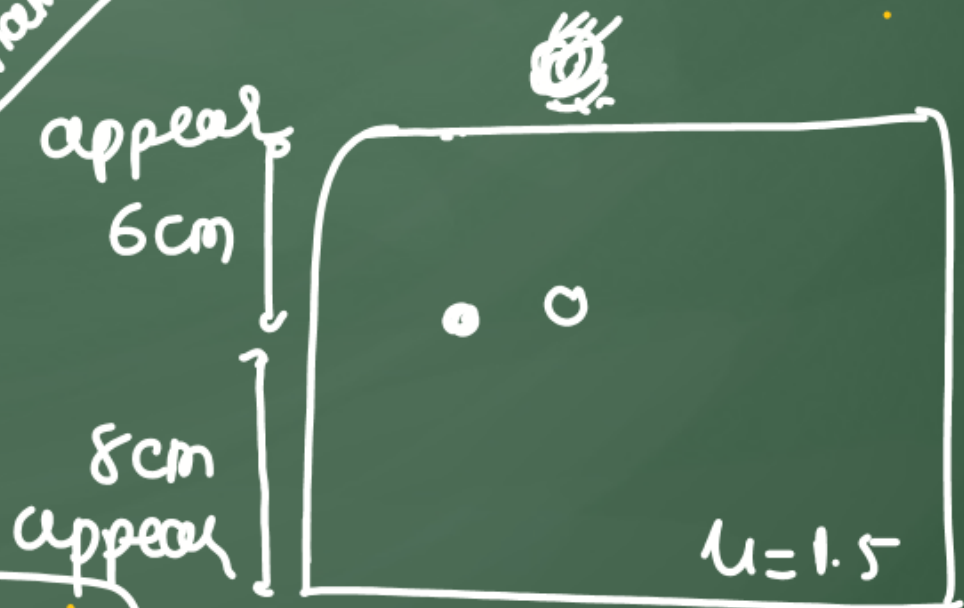
16) उत्तर
Bottom part
will appear = ?

\odot \otimes
 $n_i = x/\mu$



$d_{app} = \frac{d_1}{\mu_1} + \frac{d_2}{\mu_2}$

17) उत्तर
NEET/JEE marks



thickness of the slab = ?

$d_{app} = \frac{d}{\mu}$
 $d_o = d_a \times \mu$
 $= 6 \times 1.5$

$d_o = 8 \times 1.5$

- 1) 1.5×14
- 2) $\frac{14}{1.5}$
- 3) $\frac{1.5}{14}$
- 4) none

Ray optics.

day-2

concept of app. depth & shift

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4 marks]

(18)

4/25

E_1 will appear
to $E_2 = ?$



E_2 will appear
to $E_1 = ?$

DRO

$$d_{app} = \frac{x}{u} = \frac{10 \times 3}{42} = \frac{15 \text{ cm}}{12}$$

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R D I ✓

$$d_{app} = xu.$$

$$= 10 \times \frac{4}{3}$$

$$= \frac{40}{3} \text{ cm}$$

Ray optics
day 2

concept of app. depth & shift

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4 marks]

Ray optics
day 2

concept of app. depth & shift

NEET/JEE 2024. [3 questions
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