

# PHYSICS

1. (2)

2. (2)

By Newton's formula,

$$x_1 x_2 = f^2 \Rightarrow \sqrt{x_1 x_2}$$

3. (3)

4. (3)

$$\text{Here } m = -\frac{v}{u} = 4 \Rightarrow v = -4u$$

$$\text{By mirror formula, } \frac{1}{-4u} + \frac{1}{u} = \frac{1}{f}$$

$$\Rightarrow f = \frac{4}{3}u \text{ but } u = -0.6 \text{ so } f = -0.8 \text{ cm}$$

$$\Rightarrow R = 1.6 \text{ cm (concave)}$$

5. (3)

6. (2)

Here,  $f = +0.2 \text{ m}$ ,  $u = -2.8 \text{ m}$ 

$$\text{So, } \frac{1}{v} + \frac{1}{-2.8} = \frac{1}{0.2} \Rightarrow v = \frac{28}{150} \text{ m}$$

$$\text{magnification} = -\frac{\left(\frac{28}{150}\right)}{2.8} = \frac{-1}{15}$$

7. (3)

8. (2)

$$\text{Minimum length of mirror} = \frac{h}{2} = 3 \text{ feet}$$

9. (1)

When the incident ray is fixed and mirror rotates through  $10^\circ$  clockwise then reflected ray rotates clockwise through  $20^\circ$  angle and when mirror is fixed and incident ray rotates through  $5^\circ$  clockwise then reflected ray rotates through  $5^\circ$  anticlockwise. Total angle turned by the reflected ray =  $20^\circ \downarrow + 5^\circ \uparrow = 15^\circ \downarrow$

10. (2)

From mirror formula  $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$  image

distance of A

$$\frac{1}{u_A} - \frac{1}{(-30)} = \frac{1}{-10} \Rightarrow -15 \text{ cm}$$

Also image distance of C,  $v_C = -20 \text{ cm}$ 

$$\text{The length of image} = (u_A - v_C) \\ = (-15 - (-20)) = 5 \text{ cm}$$