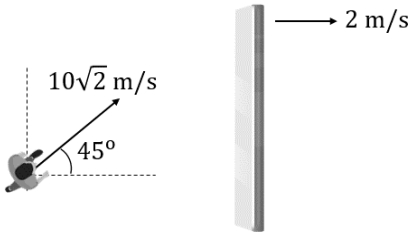
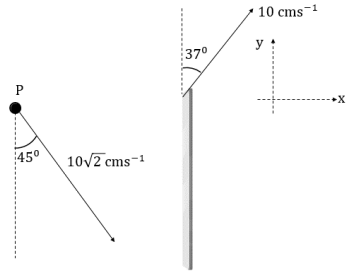
Q.1 Find the velocity of image, when the motion of the object and the mirror are as shown in the figure below.



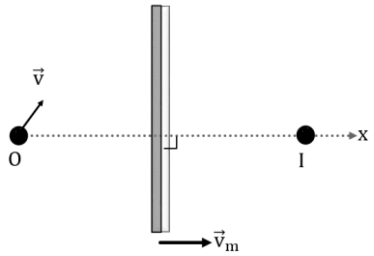
(A) $6\hat{\imath} + 10\hat{\jmath}$ **(B)** $-6\hat{\imath} + 10\hat{\jmath}$ **(C)** $6\hat{\imath} - 10\hat{\jmath}$ **(D)** $-6\hat{\imath} - 10\hat{\jmath}$

Q.2 Find the velocity of image of point object P formed by the plane mirror



(A) $2\hat{\imath} + 10\hat{\jmath}$ **(B)** $2\hat{\imath} - 10\hat{\jmath}$ **(C)** $10\hat{\imath} + 2\hat{\jmath}$ **(D)** $10\hat{\imath} - 2\hat{\jmath}$

Q.3 An object O is moving with velocity of $(\hat{\imath} + 2\hat{\jmath} + 3\hat{k})$ m/s and a plane mirror in yz plane facing the object is moving with velocity of $(2\hat{\imath})$ m/s. The velocity of the image with respect to ground (in SI units) will be

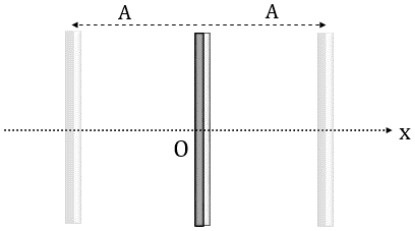


(A) $2\hat{\imath}$ **(B)** $-\hat{\imath} + 2\hat{\jmath} + 3\hat{k}$ **(C)** $3\hat{\imath} + 2\hat{\jmath} + 3\hat{k}$ **(D)** $2\hat{\imath} - 3\hat{k}$

Q.4 A cubical room is made by placing 6 identical plane mirrors with the reflecting surface on the inside of the room. An insect crawls along the diagonal of the floor with constant speed of 40 cm/sec. What is the magnitude of velocity of image of insect w.r.t insect in one of the two adjacent walls?

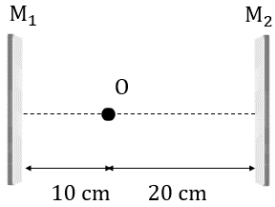
(A) $40\sqrt{2}$ c m/s **(B)** $\frac{20}{\sqrt{2}}$ c m/s **(C)** $20\sqrt{2}$ c m/s **(D)** 20 c m/s

Q.5 The plane mirror shown in above figure is performing SHM with amplitude A = 3 cm. The amplitude of SHM of image w.r.t ground is



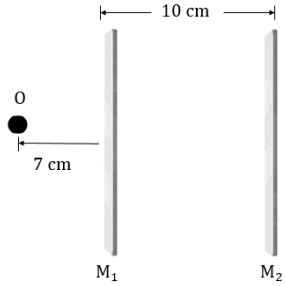
(A)0 **(B)**4 cm **(C)**6cm **(D)**1.5cm

Q.6 An object 'O' is placed between two parallel mirrors M_1 and M_2 as shown in the figure. Find the distance between the 1st image formed by M_1 and 3rd image formed by M_2. [Assume, the first reflection occurs at M_1].



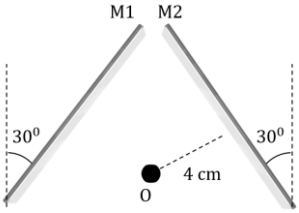
(A)90 cm **(B)**80cm **(C)**100cm **(D)**120cm

Q.7 The figure shows two parallel plane mirrors. Object 'O' is placed 7 cm from mirror M_1. Then, the distance of the final image from the mirror M_1 is



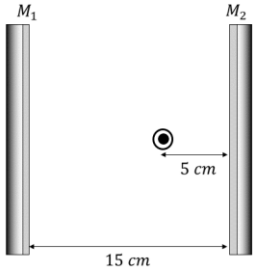
(A)7 cm **(B)**3cm **(C)**13cm **(D)**10cm

Q.8 Two plane mirrors M_1 and M_2 are inclined at 30° to the vertical. A point object (O) is placed symmetrically between them at a distance of 4 cm from each mirror. Find the distance of the object from the second image formed in mirror M_1



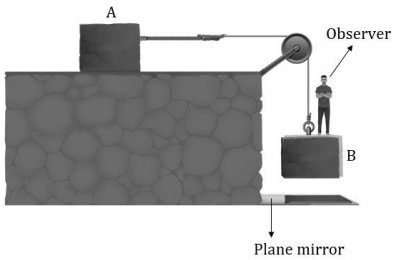
(A)$8\sqrt{3}$ cm **(B)**$4\sqrt{3}$ cm **(C)**$8\sqrt{2}$ cm **(D)**8 cm

Q.9 Two plane mirrors are parallel to each other and an object O is placed between them. The distance (in cm) of the first three images from the mirror M_2 after reflection from the mirror M_2 will be.



(A)5,10,15 **(B)**5,15,30 **(C)**5,25,35 **(D)**5,15,25

Q.10 Two bodies A and B having mass m and 3m are connected by a light string as shown in the figure. The observer is on the block B. Find the acceleration of the image of block B as seen by the observer



(A) $\frac{3g}{2}$ downwards **(B)** $\frac{3g}{2}$ upwards **(C)** $\frac{g}{2}$ upwards **(D)** $\frac{g}{4}$ downwards

ANSWER KEY

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