

Short Answer Type (I) Questions

(2 marks each)

1. If the angle of elevation of top of tower is 60° and the horizontal distance from eye to the foot of the tower is 500 m, then find the height of the tower.
2. A statue 1.6 m tall stands on the top of a pedestal. From a point on the ground, the angle of elevation of the top of the statue is 60° and from the same point the angle of elevation of the top of the pedestal is 45° . Find the height of the pedestal.
3. If two towers of heights x m and y m subtend angles of 45° and 60° , respectively at the centre of a line joining their feet, then find the ratio of $(x + y): y$.
4. Find the length of the shadow on the ground of a pole of height 18 m when the angle of elevation θ of the sun is such that $\tan \theta = \frac{6}{7}$.
5. The angle of elevation of the top of a hill the foot of a tower is 60° and the angle of elevation of the top of the tower from the foot of the hill is 30° . If the tower is 50 m high, then find the height of the hill.

Short Answer Type (II) Questions

(3 marks each)

6. A hunter standing on the bank of the river, observes that the angle of elevation of the top of a tree, standing on the opposite bank is 60° . When he moves 40 m away from the bank, he finds the angle of elevation to be 30° . Find the height of the tree and width of the river.
7. From the top of a tower h m high, the angle of depression of two objects which are in line with the foot of the tower, are α and β ($\beta > \alpha$). Show that the distance between the two objects is $h(\cot \alpha - \cot \beta)$.
8. Two pillars of equal height are on either sides of a road, which is 100 m wide. The angles of the top of the pillars are 60° and 30° at a point on the road between the pillars. Find the position of the point between the pillars. Also, find the height of each pillar.
9. If the angle of elevation of the cloud from a point h m above a lake is α and the angle of depression of its reflection in the lake is β , then prove that the height of the cloud is $\frac{h(\tan \beta + \tan \alpha)}{\tan \beta - \tan \alpha}$.

Long Answer Type Questions

(5 marks each)

10. An aeroplane flying horizontally at a height of 2500 m above the ground is observed at an elevation of 60° and after 15 sec, the elevation is observed to be 30° . Find the speed (in km/h) of the aeroplane.
11. From the point, 36 m above the surface of a lake, the angle of elevation of a bird is observed to be 30° and angle of depression of its image in the water of the lake is observed to be 60° . Find the actual height of the bird above the surface of the lake.

Answers

1. $500\sqrt{3}$ m 2. $0.8(\sqrt{3}+1)$ m 3. $(1+\sqrt{3})\sqrt{3}$ 4. 21 m
5. 150 m 6. Height of tree = 34.64 m, Weidth of river = 20 m
8. 25 m, 43.3 m 10. 692.8 km/h 11. 72 m

For Solution
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