

Model Question Paper
Trigonometry - Part III

10th Standard

Maths

Reg.No. :

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I. Answer all the questions.

II. use blue pen only.

Time : 01:00:00 Hrs

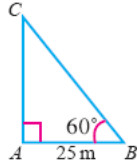
Total Marks : 40

5 x 1 = 5

Part-A

1)

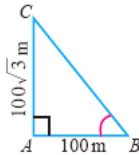
In the adjoining figure, AC =



- (a) 25 m (b) $25\sqrt{3}$ m (c) $\frac{25}{\sqrt{3}}$ m (d) $25\sqrt{2}$ m

2)

In the adjoining figure $\angle ABC =$



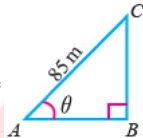
- (a) 45° (b) 30° (c) 60° (d) 50°

3) A man is 28.5 m away from a tower. His eye level above the ground is 1.5 m. The angle of elevation of the tower from his eyes is 45° . Then the height of the tower is

- (a) 30 m (b) 27.5 m (c) 28.5 m (d) 27 m

4)

In the adjoining figure, $\sin \theta = \frac{15}{17}$. Then BC =



- (a) 85m (b) 65m (c) 95m (d) 75m

5) $(1 + \tan^2 \theta) (1 - \sin \theta) (1 + \sin \theta) =$

- (a) $\cos^2 \theta - \sin^2 \theta$ (b) $\sin^2 \theta - \cos^2 \theta$ (c) $\sin^2 \theta + \cos^2 \theta$ (d) 0

Part-B

5 x 2 = 10

- 6) The angle of elevation of the top of a tower as seen by an observer is 30° . The observer is at a distance of $30\sqrt{3}$ m from the tower. If the eye level of the observer is 1.5 m above the ground level, then find the height of the tower.
- 7) A ramp for unloading a moving truck, has an angle of elevation of 30° . If the top of the ramp is 0.9 m above the ground level, then find the length of the ramp.
- 8) A girl of height 150 cm stands in front of a lamp-post and casts a shadow of length $150\sqrt{3}$ cm on the ground. Find the angle of elevation of the top of the lamp-post.
- 9) Suppose two insects A and B can hear each other up to a range of 2 m.. The insect A is on the ground 1 m away from a wall and sees her friend B on the wall, about to be eaten by a spider. If A sounds a warning to B and if the angle of elevation of B from A is 30° , will the spider have a meal or not ? (Assume that B escapes if she hears A calling)
- 10) A simple pendulum of length 40 cm subtends 60° at the vertex in one full oscillation. What will be the shortest distance between the initial position and the final position of the bob?
 (between the extreme ends)

Part-C

5 x 5 = 25

- 11) If $\sin \theta$, $\cos \theta$ and $\tan \theta$ are in G.P., then prove that $\cot^6 \theta - \cot^2 \theta = 1$
- 12) A vertical tree is broken by the wind. The top of the tree touches the ground and makes an angle 30° with it. If the top of the tree touches the ground 30 m away from its foot, then find the actual height of the tree.
- 13) A jet fighter at a height of 3000 m from the ground, passes directly over another jet fighter at an instance when their angles of elevation from the same observation point are 60° and 45° respectively. Find the distance of the first jet fighter from the second jet at that instant. ($\sqrt{3} = 1.732$)
- 14) The angle of elevation of the top of a hill from 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.
- 15) A vertical wall and a tower are on the ground. As seen from the top of the tower, the angles of depression of the top and bottom of the wall are 45° and 60° respectively. Find the height of the wall if the height of the tower is 90 m. ($\sqrt{3} = 1.732$)
