SHIKSHA CLASSES

Sub. : Maths. **Question Paper** **Total Marks : 30**
Std. X (CBSE) **9 : Application of Trigonometry** **Time : 1 hour**

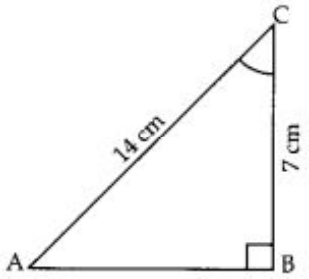
Section : A (Each 1 Mark)

Multiple choice Questions (MCQs).

Q.1 : The shadow of a tower is equal to its height at 10:45 a.m. The sun's altitude is.

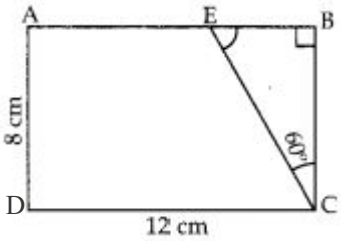
a) 30° b) 45° c) 60° d) 90°

Q.2 : In given figure, the value of $\angle C$ is



a) 90° b) 45° c) 30° d) 60°

Q.3 : In figure given ABCD is a rectangle, the value of CE is



a) 16 cm b) 2 cm c) 3 cm d) 4 cm

Q.4 : If the length of the shadow of a tree is decreasing then the angle of elevation is:

a) Increasing b) Decreasing
c) Remains the same d) None of the above

Q.5 : The angle of elevation of the top of a building from a point on the ground, which is 30 m away from the foot of the building, is 30°. The height of the building is:

a) 10 m b) $\frac{30}{\sqrt{3}}$ m c) $\frac{\sqrt{3}}{10}$ m d) 30 m

Q.6 : If the height of the building and distance from the building foot's to a point is increased by 20%, then the angle of elevation on the top of the building:

a) Increases b) Decreases

c) Do not change d) None of the above

Q.7 : If a tower 6m high casts a shadow of $2\sqrt{3}$ m long on the ground, then the sun's elevation is:

a) 60° b) 45° c) 30° d) 90°

Q.8 : The angle of elevation of the top of a building 30 m high from the foot of another building in the same plane is 60°, and also the angle of elevation of the top of the second tower from the foot of the first tower is 30°, then the distance between the two buildings is:

a) $10\sqrt{3}$m b) $15\sqrt{3}$m c) $12\sqrt{3}$m d) 36 m

Q.9 : A ladder makes an angle of 60° with the ground, when placed along a wall. If the foot of ladder is 8 m away from the wall, the length of ladder is

a) 4 m b) 8 m c) $8\sqrt{3}$m d) 16 m

For question number 10 to 11 two statements are given one labeled Assertion and other labeled Reason select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below

a) Both assertion and reason are correct and reason is correct explanation for assertion.

b) Both Assertion and Reason are correct but reason is not correct explanation for assertion.

c) Assertion is correct but reason is false.

d) Both Assertion and Reason are false.

Q.10 : **Assertion:** The angle of elevation of an object viewed, is the angle formed by the line of sight with the horizontal when it is above the horizontal level.

Reason: The angle of depression. of an object viewed, is the angle formed by the line of sight with the horizontal when it is below the horizontal level.

Q.11 : **Assertion:** The line of sight is the line drawn from the eye of an observer to the point in the object viewed by the observer.

Rreason: trigonometric ratios are used to find height or length of an object or distance between two distant objects.

Section : B (Each 2 Marks)

Q.12 : A tower is $100\sqrt{3}$ m height. Find the angle of elevation if its top from a point 100 m a way from its foot.

Q.13 : The angle of elevation of the top of a tower from two points at a distance of 4 m and 9 m from the base of the tower and in the same straight line with it are complementary. Prove that the height of the tower is 6 m.

OR

If the length of the shadow is $\sqrt{3}$ times of the height of the tower then what is the angle of elevation of the sun?

Section : C (Each 3 Marks)

Q.14 : A tree is broken by the wind. The top struck the ground at an angle of 30° and at a distance of 30 m from the root. Find the whole height of the tree.

Q.15 : Two pillars of equal height and on either side of a road, which is 100 m wide. The angle of elevation 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 and the height of each pillar.

OR

From the top of a hill, the angle of depression of two consecutive kilometre stones due east are found to be 30° and 45°. Find the height of the hill.

Section - D(Each 5 Marks)

Q.16 : The angle of elevation of a cloud from a point 60 m above a lake is 30° and the angle of depression of the reflection of cloud in the lake is 60°. Find the height of the cloud.

OR

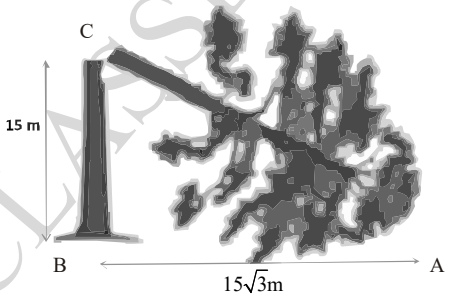
A person standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank 60°. When he moves 40 metres away from the bank, he finds the angle of elevation to be 30°. Find the height of the tree and the width of the river.

Section : E

Q.17 : **Case study :**

Suresh is having a garden near Delhi. In the garden, there are different types of trees and flower plants. One day due to heavy rain and storm one of the trees got broken as shown in the figure.

The height of the unbroken part is 15 m and the broken part of the tree has fallen at $15\sqrt{3}$m away from the base of the tree.



i) Find the angle formed by the top of the tree and the ground. 1

ii) What is the length of the broken part? 1

iii) What is the height of the full tree? 2

OR

What is the area of the formed right angle triangle?

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