Some Applications of Trigonometry

Question 1.
The tops of two poles of height 16m and 10m are connected by a wire. If the wire makes an angle of 60° with the horizontal, then the length of the wire is
(a) 10m
(b) 12m
(c) 16m
(d) 18m

Answer: (b) 12m

Question 2.
A 20 m long ladder touches the wall at a height of 10 m. The angle which the ladder makes with the horizontal is
(a) 450
(b) 300
(c) 900
(d) 600

Answer: (b) 300

Question 3.
If the length of the shadow of a tower is √3 times that of its height, then the angle of elevation of the sun is
(a) 30°
(b) 45°
(c) 60°
(d) 75°

Answer: (a) 30°

Question 4.
If sun's elevation is 60° then a pole of height 6 m will cast a shadow of length
(a) $3\sqrt{2}$ m
(b) $6\sqrt{3}$ m
(c) $2\sqrt{3}$ m
(d) $\sqrt{3}$ m

Answer: (c) $2\sqrt{3}$ m

Question 5.
The angle of elevation of top of a tower from a point on the ground, which is 30 m away from the foot of the tower is 30°. The length of the tower is
(a) $\sqrt{3}$ m
(b) $2\sqrt{3}$ m
(c) $5\sqrt{3}$m
(d) $10\sqrt{3}$ m

Answer: (d) $10\sqrt{3}$ m

Question 6.
A contractor planned to install a slide for the children to play in a park. If he prefers to have a slide whose top is at a height of 1.5m and is inclined at an angle of 30° to the ground, then the length of the slide would be
(a) 1.5m
(b) $2\sqrt{3}$m
(c) $\sqrt{3}$m
(d) 3m

Answer: (d) 3m

Question 7.
When the length of shadow of a vertical pole is equal to $\sqrt{3}$ times of its height, the angle of elevation of the Sun's altitude is
(a) 30°
(b) 45°
(c) 60°
(d) 15

Answer: (a) 30°

Question 8.
From a point P on the level ground, the angle of elevation of the top of a tower is 30°. If the tower is 100m high, the distance between P and the foot of the tower is
(a) 100√3m
(b) 200√3m
(c) 300√3m
(d) 150√3m

Answer: (a) 100√3m

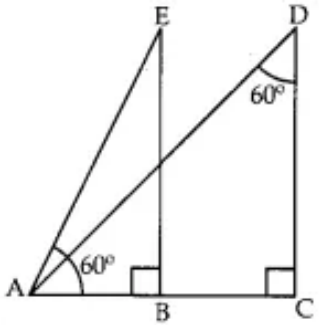
Question 9.
When the sun's altitude changes from 30° to 60°, the length of the shadow of a tower decreases by 70m. What is the height of the tower?
(a) 35 m
(b) 140 m
(c) 60.6 m
(d) 20.2 m

Answer: (c) 60.6 m

Question 10.
The _____ of an object is the angle formed by the line of sight with the horizontal when the object is below the horizontal level.
(a) line of sight
(b) angle of elevation
(c) angle of depression
(d) none of these

Answer: (c) angle of depression

Question 11.
In given Fig., the angle of depression from the observing position D and E of the object at A are



(a) 60°, 60°
(b) 30°, 30°
(c) 30°, 60°
(d) 60°, 30°

Answer: (c) 30°, 60°

Question 12.
Guddi was standing on a road near a mall. She was 1000m away from the mall and able to see the top of the mall from the road in such a way that top of the tree, which is in between her and the mall, was exactly in line of sight with the top of the mall. The tree height is 10m and it is 20m away from Guddi. How tall is the mall?
(a) 453m
(b) 856m
(c) 290m
(d) 470m

Answer: (d) 470m

Question 13.
A tower stands vertically on the ground. From a point C on the ground, which is 20 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 450. The height of the tower is
(a) 15 m
(b) 8 m
(c) 20 m
(d) 10 m

Answer: (a) 15 m

Question 14.
If a kite is flying at a height of $10\sqrt{3}$m from the level ground attached to a string inclined at 60° to the horizontal then the length of the string is
(a) 20m
(b) $40\sqrt{3}$m
(c) $60\sqrt{3}$m
(d) $80\sqrt{3}$m

Answer: (a) 20m

Question 15.
A tower stands vertically on the ground from a point on the ground which is 25 m away from the foot of tower if the height of tower is $25\sqrt{3}$ metres find the angle of elevation.
(a) 60°
(b) 30°
(c) 120°
(d) 90°

Answer: (a) 60°

Question 16.
A circus artist is climbing a long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. The ratio of the height of the pole to the length of the string is $1 : \sqrt{2}$. The angle made by the rope with the ground level is
(a) 30°
(b) 45°
(c) 60°
(d) none of these

Answer: (b) 45°

Question 17.
A circus artist is climbing a 20 m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. If the angle made by the rope with the ground level is 30°, then the height of the pole is
(a) 10m
(b) 20m
(c) $10\sqrt{3}$m
(d) $20\sqrt{3}$m

Answer: (a) 10m

Question 18.
If the angle of depression of an object from a 75m high tower is 30°, then the distance of the object from the tower is
(a) $50\sqrt{3}$m
(b) $25\sqrt{3}$m
(c) $75\sqrt{3}$m
(d) $100\sqrt{3}$m

Answer: (c) $75\sqrt{3}$m

Question 19.
The angle of elevation of the sun, when the length of the shadow of a tree is equal to the height of the tree, is:
(a) 45°
(b) 60°
(c) 30°
(d) None of these

Answer: (a) 45°

Question 20.
A tower stands vertically on the ground. From a point on the ground 30 m away from the foot of the tower, the angle of elevation of the top of the tower is 45o. The height of the tower will be
(a) 30√3 m
(b) 40√3 m
(c) 30 m
(d) 40 m

Answer: (c) 30 m

Question 21.
An observer 1.5m tall is 23.5m away from a tower 25m high. The angle of elevation of the top of the tower from the eye of the observer is
(a) 30°
(b) 45°
(c) 60°
(d) none of these

Answer: (b) 45°

Question 22.
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°

Answer: (b) 45°
