RK VISION ACADEMY

NEET | IIT – JEE | FOUNDATION

CBSE PRACTICE PAPER(2024)

(Mathematics)

Grade : X **Marks: 40 marks**

Chapter: App Trignometry **SET-1** **Time: 90 minutes**

SECTION A

(This section comprises of Multiple-choice questions (MCQ) of 1 mark each.)

1. 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. Find the height of the pole if the angle made by the rope with the ground level is 30°.

   (A) 10 m (B) 15 m (C) 20 m (D) 35 m

2. An observer of 2.25 m tall is 42.75 m away from a chimney. The angle of elevation of the top of the chimney from her eyes is 45°. What is the height of the chimney?

   (A)40 m (B)50 m (C)45 m (D)35 m

3. A tower stands vertically on the ground. From a point on the ground, which is 30 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 30°. Find the height of the tower.

   (A)10 m (B)$10\sqrt{3}$ m (C)$30\sqrt{3}$ m (D)30 m

4. The angles of depression of the top and the bottom of a 10 m tall building from the top of a multi-storeyed building are 30° and 45°, respectively. Find the height of the multi-storeyed building.

   (A)5 m (B)$5(\sqrt{3}+3)$ m (C)15 m (D)10 m

5. A contractor plans to install two slides for the children to play in a park. For the children below the age of 5 years, she prefers to have a slide whose top is at the height of 2 m and is inclined at an angle of 30° to the ground. What should be the length of the slide

   (A)4 (B)2 (C)1.5 (D)3

6. A kite is flying at a height of 30 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60°. Find the length of the string, assuming that there is no slack in the string.

   (A)$20\sqrt{3}m$ (B)30m (C) $30\sqrt{3}m$ (D)60m

7. A vertical pole of 30 m is fixed on a tower. From a point on the level ground, the angles of elevation of the top and bottom of the pole are 60° and 45°. Find the height of the tower.

   (A)20 (B)$15(\sqrt{3}+1)$ (C) $15(\sqrt{3}-1)$ (D)15

8. Two towers, A and B, are standing at some distance apart. From the top of tower A, the angle of depression of the foot of tower B is found to be 30°. From the top of tower B, the angle of depression of the foot of tower A is found to be 60°. If the height of tower B is 'h' m, then the height of tower A in terms of 'h' is _____ m

   (A)h/2m (B)h/3m (C)$\sqrt{3}m$ (D)h/$\sqrt{3}m$

9. A 1.5 m tall boy is standing some distance from a 31.5 m tall building. If he walks 'd' m towards the

building, the angle of elevation of the top of the building changes from 30° to 60°. Find the length of d. (Take $\sqrt{3} = 1.73$)

(A) 30.15 m (B) 38.33 m (C) 22.91 m (D) 34.55 m

10 The angles of depression of two objects from the top of a 100 m hill lying to its east are found to be 45° and 30°. Find the distance between the two objects**. (Take** $\sqrt{3} = 1.73$**,**

200 m 150 m 107.5 m 3.2 m

SECTION B

(This section comprises of very short answer type-questions (VSA) of 2 marks each)

11 If the height of a tower and the distance of the point of observation from its foot, both, are increased by 10%, then the angle of elevation of its top remains unchanged.

12 A ladder 15 metres long just reaches the top of a vertical wall. If the ladder makes an angle of 60° with the wall, find the height of the wall.

13 An observer 1.5 metres tall is 20.5 metres away from a tower 22 metres high. Determine the angle of elevation of the top of the tower from the eye of the observer.

SECTION C

(This section comprises of short answer type questions (SA) of 3 marks each)

14 An army pilot is flying an aeroplane at an altitude of 1800 m observes some suspicious activity of two ships which are sailing towards it in the same direction and immediately report it to the navy chief. The angles of depression of the ships as observed from the aeroplane are 60° and 30°, respectively. Find the distance between two ships.

15 A spherical balloon of radius r subtends an angle θ at the eye of an observer. If the angle of elevation of its centre is φ, find the height of the centre of the balloon

16 The angle of elevation of the top of a tower from certain point is 30°. If the observer moves 20 metres towards the tower, the angle of elevation of the top increases by 15°. Find the height of the tower

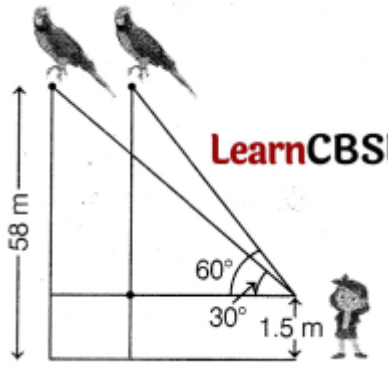
SECTION D

(This section comprises of long answer-type questions (LA) of 5 marks each)

17 A 1.5 m tall boy is standing at some distance from a 30 m tall building. The angle of elevation from his eyes to the top of the building increases from 30° to 60° as he walks towards the building. Find the distance he walked towards the building.

18 The shadow of a vertical tower on a ground level increases by 10 m, when the angle of elevation of the Sun changes from 45° to 30°. Find the height of the tower correct to two decimal places.

19 A girl 1.5 m tall spots a parrot sitting on the top of a building of height 58 m from the ground. The angle of elevation of the parrot from the eyes of girl at any instant is 60°.



The parrot flies away horizontally in such a way that it remained at a constant height from the ground. After 8 sec, the angle of elevation of the parrot from the same point is 30°.

Based on the above information, answer the following questions, (take $3-\sqrt{} = 1.73$)

(i) Find the distance between the girl and the building. (1)

(ii) Find the distance of first position of the parrot from the eyes of the girl. (2)

(iii) Find the speed of the parrot in 8 sec. (2)