EduFest Junior Academy Pune 7709585248

Class 10 Mathematics –Trigonometry & Applications of Trigonometry

Maximum Marks: 30

Section A – Multiple Choice Questions (1 mark each)

1. If $\sin\theta = 3/5$, then $\cos\theta$ is:
   (a) 4/5 (b) 5/4 (c) 3/4 (d) 2/5

2. The value of $\tan^2 45° + \cos^2 30°$ is:
   (a) 1 (b) 2 (c) 7/4 (d) √3/2

3. If $\sec\theta = 13/12$, then $\tan\theta$ is:
   (a) 12/13 (b) 5/12 (c) 5/13 (d) 12/5

4. The angle of elevation of the top of a tower from a point on the ground at a distance 60 m from its foot is 30°. The height of the tower is:
   (a) 20√3 m (b) 30√3 m (c) 15√3 m (d) 60 m

Section B – Short Answer Questions (2 marks each)

5. If $3\cot A = 4$, then find $\sin A$ and $\cos A$.

6. Evaluate: $(1 + \tan^2 45°) / (1 + \cot^2 30°)$.

7. A ladder 15 m long leans against a wall. If the foot of the ladder is 9 m away from the wall, find the angle of elevation of the ladder with the ground.

Section C – Long Answer Questions (3 marks each)

8. Prove: $(1 – \cot^2\theta) / (1 + \cot^2\theta) = (\cos 2\theta) / (\cos^2\theta)$.

9. The angle of elevation of the top of a building from the foot of a tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60°. If the tower is 50 m high, find the height of the building.

Section D – Case Study (4 marks)

10. A student is standing at a distance of 48 m from a building and observes the top of a flagpole on the building. The angle of elevation of the top of the flagpole is 60° and the angle of elevation of the top of the building is 45°. Find the height of the flagpole and the total height of the building with the pole.