

## QUESTION BANK

### CHAPTER 6 - TRIGONOMETRY

#### 1 MARK QUESTIONS

1. Write the value of  $\sin 45^\circ$ .
2. When we see at a lower level from the horizontal line, then what is the angle formed called as?
3. Write the value of :  $\left( \frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} \right) \times 5 \sin \theta \cdot \cos \theta$
4. If  $\sin \theta = \frac{11}{61}$ , find the value of  $\cos \theta$  using trigonometric identity.
5. What is the value of :  $\cot^2 \theta - \frac{1}{\sin^2 \theta}$  ?
6. Write the value of  $\sin 30^\circ$ .
7. When we see at a higher level, from the horizontal line, then what is the angle formed called as?
8. Write the value of :  $\left( \frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} \right) \times 3 \sin \theta \cdot \cos \theta$
9. If  $\tan \theta = 2$ , find the value of  $\sec \theta$  using trigonometric identity.
10. Write the value of  $\sin 60^\circ$ .
11. Write the value of :  $\left( \frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} \right) \times 4 \sin \theta \cdot \cos \theta$
12. If  $\sec \theta = \frac{13}{12}$ , find the value of  $\tan \theta$  using trigonometric identity.
13. Write the value of  $\sin 90^\circ$ .
14. Write the value of :  $\left( \frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} \right) \times 6 \sin \theta \cdot \cos \theta$
15. If  $\cot \theta = \frac{40}{9}$ , find the value of  $\operatorname{cosec} \theta$  using trigonometric identity.
16. Write the value of :  $\left( \frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} \right) \times 8 \sin \theta \cdot \cos \theta$
17. If  $\sin \theta = \frac{7}{25}$ , find the value of  $\cos \theta$  using trigonometric identity.
18. Write the value of :  $\left( \frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} \right) \times 7 \sin \theta \cdot \cos \theta$
19. If  $5 \sec \theta - 12 \operatorname{cosec} \theta = 0$ , then find the value of  $\tan \theta$ .

### 2 MARK QUESTIONS

1. If  $5\sin \theta - 12\cos \theta = 0$ , then find the values of  $\tan \theta$  and  $\cos \theta$ .
2. Prove :-  $\sec^2\theta + \operatorname{cosec}^2\theta = \sec^2\theta .\operatorname{cosec}^2\theta$ .
3. If  $\cot \theta = \frac{7}{24}$ , then find the values of  $\tan \theta$  and  $\sin \theta$ .
4. Find the value of :  $(1 + \tan^2 \theta) (1 - \sin \theta) (1 + \sin \theta)$ .
5. If  $3\sin \theta - 4\cos \theta = 0$ , then find the values of  $\cot \theta$  and  $\sin \theta$ .
6. If  $\tan \theta + \frac{1}{\tan \theta} = 2$ , then prove that  $\tan^2\theta + \frac{1}{\tan^2\theta} = 2$
7. If  $\cos \theta = \frac{7}{25}$ , then find the values of  $\operatorname{cosec} \theta$  and  $\tan \theta$ .
8. Find the value of :  $(1 + \cot^2\theta) (1 + \cos \theta) (1 - \cos \theta)$ .
9. Prove :-  $\cot \theta + \tan \theta = \operatorname{cosec} \theta .\sec \theta$ .

### 3 MARK QUESTIONS

1. If  $\cos \theta = \frac{\sqrt{3}}{2}$ , then find the value of  $\frac{1 - \sec \theta}{1 + \operatorname{cosec} \theta}$ .
2. A boy standing at a distance of 48 metres from a building observes the top of the building and makes an angle of elevation of  $30^\circ$ . Find the height of the building.
3. From the top of the light house, an observer looks at a ship and finds the angle of depression to be  $30^\circ$ . If the height of the light-house is 100 metres, then find how far the ship is from the light-house.
4. Prove :-  $\sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} = \sec \theta - \tan \theta$
5. Prove :-  $\frac{\tan \theta}{\sec \theta - 1} = \frac{\tan \theta + \sec \theta + 1}{\tan \theta + \sec \theta - 1}$
6. If  $\cos \theta = \frac{1}{\sqrt{2}}$ , then find the value of  $\frac{1 - 2 \tan \theta}{1 + 2 \cot \theta}$ .
7. A person is standing at a distance of 80 m from a church looking at its top. The angle of elevation is of  $45^\circ$ . Find the height of the church.

8. Prove :-  $\sec \theta + \tan \theta = \frac{\cos \theta}{1 - \sin \theta}$
9. If  $\sec \theta = \frac{2}{\sqrt{3}}$ , then find the value of  $\frac{1 - \operatorname{cosec} \theta}{1 + \operatorname{cosec} \theta}$ .
10. A kite is flying at a height of 60 m above the ground. The string attached to the kite is tied at the ground. It makes an angle of  $60^\circ$  with the ground. Assuming that the string is straight, find the length of the string. ( $\sqrt{3} = 1.73$ )
11. From the top of a lighthouse, an observer looking at a ship makes angle of depression of  $60^\circ$ . If the height of the lighthouse is 90 metre, then find how far the ship is from the lighthouse. ( $\sqrt{3} = 1.73$ )
12. Prove :-  $\frac{\tan \theta}{\sec \theta + 1} = \frac{\sec \theta - 1}{\tan \theta}$
13. Prove :-  $(\sec \theta - \cos \theta)(\cot \theta + \tan \theta) = \tan \theta \cdot \sec \theta$

#### 4 MARK QUESTIONS

1. Two buildings are facing each other on a road of width 12 metre. From the top of the first building, which is 10 metre high, the angle of elevation of the top of the second is found to be  $60^\circ$ . What is the height of the second building?
2. While landing at an airport, a pilot made an angle of depression of  $20^\circ$ . Average speed of the plane was 200 km/hr. The plane reached the ground after 54 seconds. Find the height at which the plane was when it started landing. ( $\sin 20^\circ = 0.342$ )
3. Prove :-  $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{1}{\sec \theta - \tan \theta}$
4. A storm broke a tree and the treetop rested 20 m from the base of the tree, making an angle of  $60^\circ$  with the horizontal. Find the height of the tree.
5. A ladder on the platform of a fire brigade van can be elevated at an angle of  $70^\circ$  to the maximum. The length of the ladder can be extended upto 20 m. If the platform is 2 m above the ground, find the maximum height from the ground upto which the ladder can reach. ( $\sin 70^\circ = 0.94$ )

6. Prove :-  $\frac{\tan A}{(1 + \tan^2 A)^2} + \frac{\cot A}{(1 + \cot^2 A)^2} = \sin A \cdot \cos A$
7. Two buildings are in front of each other on a road of width 15 metres. From the top of the first building, having a height of 12 metre, the angle of elevation of the top of the second building is  $30^\circ$ . What is the height of the second building?
8. Two poles of heights 18 metre and 7 metre are erected on a ground. The length of the wire fastened at their tops is 22 metre. Find the angle made by the wire with the horizontal?



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