

## Chapter 6 Introduction to Trigonometry

## Section A I mark each

Q1. The value of  $\tan A$  is always less than 1: (1) Yes (2) No

Q2.  $\frac{1-\tan^2 45^\circ}{1+\tan^2 45^\circ}$  is equal to:

Q3. Find value of  $\frac{\sin 30^\circ}{\cos 60^\circ}$

Q4. If  $3 \tan \theta = 2$ , evaluate  $\frac{3\sin\theta-2\cos\theta}{3\sin\theta+2\cos\theta}$

## Section B 2 mark each

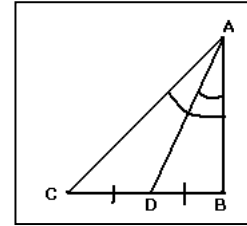
Q5. Prove  $\frac{\sin \theta - 2\sin^3 \theta}{2\cos^3 \theta - \cos \theta} = \tan \theta$

Q6. Prove  $\cos^4 A - \cos^2 A = \sin^4 A - \sin^2 A$

Q7. Prove  $\frac{1}{\sec \theta - \tan \theta} - \frac{1}{\cos \theta} = \frac{1}{\cos \theta} - \frac{1}{\sec \theta + \tan \theta}$

Q8. Prove  $(1 + \tan^2 \theta) + 1 + \frac{1}{\tan^2 \theta} = \frac{1}{(\sin^2 \theta - \sin^4 \theta)}$

Q9.  $\triangle ABC$  is right angled triangle.  $\angle CAB = \phi$ ,  $\angle DAB = \theta$ . Show  $\frac{\tan \theta}{\tan \phi} = \frac{1}{2}$



Q10. If A, B, C are interior angles of a triangle prove that  $\tan \frac{B+C}{2} = \cot \frac{A}{2}$

## Section C 3 mark each

Q11. Prove  $\frac{\tan \theta}{1-\cot \theta} + \frac{\cot \theta}{1-\tan \theta} = 1 + \sec \theta \cdot \operatorname{cosec} \theta$

Q12. Prove  $\frac{1+\tan^2 \theta}{1+\cot^2 \theta} = \left[ \frac{1-\tan \theta}{1-\cot \theta} \right]^2$

Q13. Evaluate:  $\sec^2 10^\circ - \cot^2 80^\circ + \frac{\sin 15^\circ \cos 75^\circ + \cos 15^\circ \sin 75^\circ}{\cos \theta \cdot \sin(90 - \theta) + \sin \theta \cdot \cos(90 - \theta)}$

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