

Maths 10th (Introduction to Trigonometry) Paper 2

Total Time: 1 Hour 15 Minutes

Total Marks: 35

General Instructions:

1. All questions are **compulsory**.
2. There is no choice in any of the questions.
3. Question number **1** in Section A is of three-mark question.
4. Question numbers **2** to **5** in Section A are two-mark questions.
5. Question numbers **6** to **9** in Section A are three-mark questions.
6. Question numbers **10** to **12** in Section A are four-mark questions.

Question 1. State whether the following are true or false. Justify your answer.

- (i) The value of $\tan A$ is always less than 1.
- (ii) $\sin A = 4/3$ for some angle A .
- (iii) $\sin(A + B) = \sin A + \sin B$.

Question 2. If $\angle A$ and $\angle B$ are acute angles such that $\cos A = \cos B$, then show that $\angle A = \angle B$.

Question 3. In a right triangle ABC, right-angled at B, if $\tan A = 1$, then verify that $2 \sin A \cos A = 1$.

Question 4. $\sin 2A = 2 \sin A$ is true when $A = ?$

Question 5. Evaluate $\frac{5 \cos^2 60^\circ + 4 \sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$

Question 6. Express $\sin 67^\circ + \cos 75^\circ$ in terms of trigonometric ratios of angles between 0° and 45° .

Question 7. If $\tan A = \cot B$, prove that $A + B = 90^\circ$.

Question 8. Evaluate $(\sin 63^\circ + \sin 27^\circ) / (\cos 17^\circ + \cos 73^\circ)$.

Question 9. $(1 + \tan \theta + \sec \theta)(1 + \cot \theta - \operatorname{cosec} \theta)$

- (A) 0 (B) 1 (C) 2 (D) -1

Question 10. Prove $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \operatorname{cosec} A + \cot A$, using the identity $\operatorname{cosec}^2 A = 1 + \cot^2 A$.

Question 11. Prove $(\operatorname{cosec} A - \sin A)(\sec A - \cos A) = \frac{1}{\tan A + \cot A}$

Question 12. Prove $\sqrt{\frac{1 + \sin A}{1 - \sin A}} = \sec A + \tan A$