INTRODUCTION TO TRIGONOMETRY

RIGHT ANGLE TRIANGLE

EXERCISE

Q.1 If $\sin\alpha = \frac{1}{\sqrt{2}}$ and $\tan\beta = 1$, find the value of $\sin(\alpha + \beta)$, where α and β both are acute.

Q.2 If $\cos\alpha = \frac{1}{2}$ and $\tan\beta = \frac{1}{\sqrt{3}}$, find the value of $\sin(\alpha + \beta)$, where α and β both are acute.

Q.3 If $\tan\theta = 8/15$ and $0^\circ < \theta < 90^\circ$, find $\sin\theta$.

Q.4 If $\sin\theta = 8/17$ and $0^\circ < \theta < 90^\circ$, find $\tan\theta$.

Q.5 If $\tan A = \sqrt{2} - 1$, show that $\sin A \cos A = \frac{\sqrt{2}}{4}$.

Q.6 In a Δ ABC right angled at C, if $\tan A = \frac{1}{\sqrt{3}}$ and $\tan B = \sqrt{3}$. Show that $\sin A \cos B + \cos A \sin B = 1$.

Q.7 If $\sec\alpha = \frac{5}{4}$, evaluate $\frac{1-\tan\alpha}{1+\tan\alpha}$.

Q.8 If $\cot B = \frac{12}{5}$, prove that $\tan^2 B - \sin^2 B = \sin^4 B . \sec^2 B$.

Q.9 In a right triangle ABC, right angled at B, the ratio of AB to AC is $1 : \sqrt{2}$. Find the values of

(i) $\frac{2\tan A}{1+\tan^2 A}$ (ii) $\frac{2\tan A}{1-\tan^2 A}$

Q.10 In fig. AD = DB and ∠B is a right angle. Determine

(i) $\sin\theta$ (ii) $\cos\theta$

(iii) $\tan\theta$ (iv) $\sin^2\theta + \cos^2\theta$

ANSWER KEY

1. 1

2. 1

3. $\frac{8}{17}$

4. $\frac{8}{15}$

7. $\frac{1}{7}$.

9. (i) 1

(ii) $\frac{2}{0}$, which is undefined.

10. (i) $\frac{a}{\sqrt{4b^2-3a^2}}$

(ii) $\frac{2\sqrt{b^2-a^2}}{\sqrt{4b^2-3a^2}}$

(iii) $\frac{a}{2\sqrt{b^2-a^2}}$

(iv) 1