Standard Angles And Allied Angles

1m	2m	3m	4m	5m	Total
1(U)	1(U)	1(S)	–	–	06

1 MARK QUESTIONS

1. If A = 60°. Prove that $\tan 2A = \frac{2\tan A}{1+\tan^2 A}$.
2. Prove that sin30°.cos60° + cos30°.sin60° = 1.
3. Show that: $4\sec^2 45° + 4\sin^2 30° - 2\cot^2 60° = \frac{25}{3}$.
4. If A = 45°. Prove that sin2A = 2 sinA.cosA.
5. If A = 60°. Prove that $\cos 2A = \frac{1-\tan^2 A}{1+\tan^2 A}$.
6. Find the value of cos120°.
7. Find the value of cos1125°.
8. Find the value of sin840°.
9. Find the value of tan(–855°).
10. Find the value of $\sin\left(\frac{15\pi}{4}\right)$.
11. Find the value of $\tan\left(\frac{16\pi}{3}\right)$.
12. Find the value of $\sec\left(\frac{7\pi}{3}\right)$.
13. Find the value of $\operatorname{cosec}\left(\frac{-7\pi}{4}\right)$.
14. Find the value of $\cot\left(\frac{-13\pi}{4}\right)$.

2 MARKS QUESTIONS

1. Prove that $\sin30°.\cos60° + \cos30°.\cos60° = \frac{1+\sqrt{3}}{4}$.
2. Find the value of $\sin^2\frac{\pi}{6}+\cos^2\frac{\pi}{3}-\tan^2\frac{\pi}{4}$.
3. Find the value of $\cot^2 60° + \sin^2 45° + \sin^2 30° + \cos^2 90°$.
4. Find the value of $\sin^2\frac{\pi}{6}+\cos^2\frac{\pi}{3}-\tan^2\frac{\pi}{6}+\sin\frac{\pi}{2}$.
5. Find the value of $3\tan^2\frac{\pi}{6}+\frac{4}{3}\cos^2\frac{\pi}{6}-\frac{\sec^2\left(\pi/4\right)}{2}$.
6. Find the value of $\cos^2 45° - \cos^4(30°) + \sin^4(30°)$.
7. Prove that $\cos(189°) + \cos9° = 0$.
8. Prove that $\tan(225°).\cot(405°) + \tan(765°).\cot(675°) = 0$.
9. Prove that $\sin(480°).\cos(690°) + \cos(780°).\sin(1050°) = \frac{1}{2}$.
10. Prove that $\frac{\sin(90°+\theta).\cos(180°-\theta).\cot(270°+\theta)}{\sin(90°-\theta).\sin(270°-\theta).\cot(90°+\theta)}=1$.
11. Simplify: $\frac{\cos120°+\sin135°}{\sin135°-\cos120°}$

3 MARKS QUESTIONS

1. $\frac{\sin^2 60°\cos^3 60°\sec^2 30°}{2\operatorname{cosec}^2 30°-\frac{1}{2}\sin^2 60°\tan^2 30°}$
2. S.T $\left(\frac{1-\cot\frac{\pi}{3}}{1+\cot\frac{\pi}{3}}\right)^2=\frac{1-\cos\pi/6}{1+\cos\pi/6}$
3. If $x \sin30° \cos^2 45° = \frac{\cot^2 30°\sec60°\tan45°}{\operatorname{cosec}^2 45°\operatorname{cosec}30°}$ find x.

4. If $x \sin 45° \cos^2 60° = \dfrac{\tan^2 60° \operatorname{cosec} 30°}{\sec 45° \cot 30°}$ find x.

5. If $\left(x^2 - 2 + \operatorname{cosec}^2 \dfrac{\pi}{4}\right) x - 2\sec^2 \dfrac{\pi}{3} = \cos 90°$ show that $x = 4, -2$.

6. If $x \sin 45° \tan 60° = \dfrac{\sin 30° \cot 30°}{3\cos 60° \operatorname{cosec} 45°}$ show that $x = \dfrac{1}{3}$.

7. Find x : $x \sin 30° \cos^2 45° = \dfrac{\cot^2 30° \sec 60° - \tan 45°}{\operatorname{cosec} 45° \operatorname{cosec} 30° \cos 60°}$

8. If $x^2 (\operatorname{cosec}^2 45° - \cos^2 90°) - 5 (\cos 0° + \tan 0°)x + \sec^2 45° = 0$ show that $x = 2, \dfrac{1}{2}$.

9. Simplify $\dfrac{\sin 150° - 5\cos 300° + 7\tan 2250°}{\tan 135° + 3\sin 210°}$

10. If $\sin\theta = \dfrac{-3}{5}$ and θ lies in IV Quadrant then porve that $\dfrac{3\tan\theta - 4\cos\theta}{4\tan\theta + 3\cos\theta} = \dfrac{109}{12}$.

11. Simplify: $\dfrac{\tan(180 + A)\sec(180 + A)\operatorname{cosec}(90 + A)}{\sec(360 - A)\cot(90 + A)}$

12. Simplify: $\dfrac{\operatorname{cosec}(180 + \theta)\sin(360 - \theta)\tan(360 + \theta)}{\sin(90 + \theta)\cos(180 - \theta)\tan(-\theta)}$

13. If $\sin\theta = \dfrac{11}{61}$ and $90 < \theta < 180°$. Find the values of $\cos\theta$, $\tan\theta$, $\sec\theta$.

14. If $\sin\theta = \dfrac{-8}{17}$ and $\pi < \theta < \dfrac{3\pi}{2}$. Find the values of $\dfrac{\tan\theta - \cos\theta}{\sec\theta + \operatorname{cosec}\theta}$.

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