CLASS TEST -06 **Teacher-Bivash Saha**

CLASS-XI

CHAPTER-TRIGONOMETRY

D.O.E.-05/08/2026 **MM-30(10×3)**

TIME-1 HOUR

(1) A circular wire of radius 7.5 cm is cut and bent so as to lie along the circumference of a hoop whose radius is 120 cm. Find in degrees the angle which is subtended at the centre of the hoop.

(2) Prove that

$$\tan\left(\frac{11\pi}{3}\right) - 2\sin\left(\frac{4\pi}{3}\right) - \frac{3}{4}\,\mathrm{cosec}^2\left(\frac{\pi}{4}\right) + 4\cos^2\left(\frac{17\pi}{6}\right) = \frac{3-4\sqrt{3}}{2}$$

(3) If $\theta = \frac{\pi}{2^n+1}$, prove that $2^n \cos\theta \cos 2\theta \cos 2^2\theta \ldots\ldots \cos 2^{n-1}\theta = 1$

(4) Prove that $\cos 5A = 16\cos^5 A - 20\cos^3 A + 5\cos A$

(5) Derive the value of $\sin 72°$.

(6) Prove that $\frac{\sec 8\theta - 1}{\sec 4\theta - 1} = \frac{\tan 8\theta}{\tan 2\theta}$

(7) If $\sin\theta = n\sin(\theta + 2\alpha)$, prove that $\tan(\theta+\alpha) = \frac{1+n}{1-n}\tan\alpha$

(8) Prove that $\sin 10° \sin 30° \sin 50° \sin 70° = \frac{1}{16}$

(9) If $\tan A - \tan B = x$ and $\cot B - \cot A = y$, prove that $\cot(A-B) = \frac{1}{x} + \frac{1}{y}$

(10) If $\tan 35° = a$, Prove that $\frac{\tan 145° - \tan 125°}{1 + \tan 145° \tan 125°} = \frac{1-a^2}{2a}$