

Trigonometry-1
Model Exam Question paper - 1

11th Standard

Business Maths

Reg.No. :

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I. Answer all the questions

Time : 00:35:00 Hrs

Total Marks : 25

Part-A

5 x 1 = 5

- 1) If $p = \operatorname{cosec}\theta = \cot 45^\circ$ Then p is
(a) $\cos 45^\circ$ (b) $\tan 45^\circ$ (c) $\sin 45^\circ$ (d) $\sin\theta$
- 2) $\sqrt{1 - \cos^2\theta} \times \sqrt{1 - \sin^2\theta} - \left(\frac{\cos\theta}{\operatorname{cosec}\theta}\right) =$
(a) 0 (b) 1 (c) $\cos^2\theta - \sin^2\theta$ (d) $\sin^2\theta - \cos^2\theta$
- 3) $(\sin 60^\circ + \cos 60^\circ)^2 + (\sin 60^\circ - \cos 60^\circ)^2$
(a) 3 (b) 1 (c) 2 (d) 0
- 4) $\frac{1}{\sec 60^\circ - \tan 60^\circ} =$
(a) $\frac{\sqrt{3}+2}{2\sqrt{3}}$ (b) $\frac{\sqrt{3}-2}{2\sqrt{3}}$ (c) $\frac{1+\sqrt{3}}{2}$ (d) $\frac{1-\sqrt{3}}{2}$
- 5) If $x = a\cos^3\theta, y = b\sin^3\theta$ then $\left(\frac{x}{a}\right)^{\frac{2}{3}} + \left(\frac{y}{b}\right)^{\frac{2}{3}}$ is equal to
(a) $2\cos^3\theta$ (b) $3b\sin^3\theta$ (c) 1 (d) $ab\sin^2\theta\cos^2\theta$

Part-B

4 x 2 = 8

- 6) Prove that $\frac{1}{\cot A + \tan A} = \sin A \cos A$
- 7) Prove that $\frac{1 - \tan A}{1 + \tan A} = \frac{\cot A - 1}{\cot A + 1}$
- 8) If $A = 30^\circ$ verify that
 $\cos 2A = \cos^2 A - \sin^2 A = 2\cos^2 A - 1 = 1 - 2\sin^2 A$
- 9) If $A = 30^\circ$ verify that
 $\sin 2A = 2\sin A \cos A$

Part-C

4 x 3 = 12

- 10) Prove that $\frac{1}{1 - \sin\theta} + \frac{1}{1 + \sin\theta} = 2\sec^2\theta$
- 11) Prove that $\operatorname{cosec}^4 A - \operatorname{cosec}^2 A = \cot^2 A + \cot^4 = 2$
- 12) Find the value of $\frac{4}{3}\cot^2 30^\circ + 2\sin^2 60^\circ - 2\operatorname{cosec}^2 60^\circ - \frac{3}{4}\tan^2 30^\circ$
- 13) If $4\tan A = 3$, show that $\frac{5\sin A - 2\cos A}{\sin A + \cos A} = 1$
