

Trigonometry-3
Model Exam Question paper - 3

11th Standard

Business Maths

Reg.No. :

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I. Answer all the questions

Time : 01:05:00 Hrs

Total Marks : 50

Part-A

4 x 1 = 4

- 1) $\cos(2n\pi + \theta) = \sin\alpha$ then
(a) $\theta - \alpha = 90^\circ$ (b) $\theta = \alpha$ (c) $\theta + \alpha = 90^\circ$ (d) $\alpha - \theta = 90^\circ$
- 2) $\frac{\tan 15^\circ - \tan 75^\circ}{1 + \tan 15^\circ \tan 75^\circ}$ is equal to
(a) $\frac{1+\sqrt{3}}{1-\sqrt{3}}$ (b) $\frac{1+2\sqrt{3}}{1-2\sqrt{3}}$ (c) $-\sqrt{3}$ (d) $\sqrt{3}$
- 3) The value of $\tan 453^\circ$ is
(a) $\frac{1+\sqrt{3}}{1-3\sqrt{3}}$ (b) $\frac{1+\sqrt{3}}{\sqrt{3}-1}$ (c) $\frac{\sqrt{3}-1}{1-\sqrt{3}}$ (d) 1
- 4) The value of $\cos 9^\circ \cos 6^\circ - \sin 9^\circ \sin 6^\circ$ is
(a) 0 (b) $\frac{\sqrt{3}+1}{4}$ (c) $\sin 75^\circ$ (d) $\sin 15^\circ$

Part-B

4 x 2 = 8

- 5) Find $\cos \frac{\pi}{4} \cos \frac{\pi}{3} - \sin \frac{\pi}{4} \sin \frac{\pi}{3}$
- 6) If $\sec A + \tan A = \frac{3}{2}$ prove that $\tan A = \frac{5}{12}$
- 7) Find the following
 $\sin 843^\circ$
- 8) Prove that $\tan A + \cot A = 2 \operatorname{cosec} 2A$

Part-C

6 x 3 = 18

- 9) Simplify $\frac{\sin\left(\frac{\pi}{2}-A\right)\cos(\pi-A)\tan(\pi+A)}{\sin\left(\frac{\pi}{2}+A\right)\sin(\pi-A)\tan(\pi-A)}$
- 10) Evaluate the following
 $\sec 1327^\circ$
- 11) Show that $\cos^2 36^\circ + \sin^2 180^\circ = \frac{3}{4}$
- 12) Show that $\sec 72^\circ - \sec 36^\circ = 2$
- 13) Show that $\tan^{-1} x + \tan^{-1} \left(\frac{1-x}{1+x} \right) = \frac{\pi}{4}$
- 14) Prove that $2 \tan^{-1} x = \cos^{-1} \left[\frac{1-x^2}{1+x^2} \right]$ [Hint put $x = \tan \theta$]

Part-D

4 x 5 = 20

- 15) Evaluate $\cos \left[\sin^{-1} \frac{3}{5} + \sin^{-1} \frac{5}{13} \right]$
[Hint: Let $A = \sin^{-1} \frac{3}{5}$, $B = \sin^{-1} \frac{5}{13}$]
- 16) Find the following :
(i) $\sin 843^\circ$
(ii) $\operatorname{cosec} (-757^\circ)$
(iii) $\cos (-928^\circ)$
- 17) Prove that $\frac{\cos 3A}{\cos A} + \frac{\sin 3A}{\sin A} = 4 \cos 2A$
- 18) If $x = \sec \theta + \tan \theta$, then show that $\sin \theta = \frac{x^2-1}{x^2+1}$
