

Model Question Paper**Trigonometry - Part I**

10th Standard

MathsReg.No. :

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I. Answer all the questions.

II. Use blue pen only.

III. Question number 15 is compulsory.

Time : 01:00:00 Hrs

Total Marks : 40

5 x 1 = 5

Part-A

- 1) $(1 - \sin^2 \theta) \sec^2 \theta =$
(a) 0 (b) 1 (c) $\tan^2 \theta$ (d) $\cos^2 \theta$
- 2) $(1 + \tan^2 \theta) \sin^2 \theta =$
(a) $\sin^2 \theta$ (b) $\cos^2 \theta$ (c) $\tan^2 \theta$ (d) $\cot^2 \theta$
- 3) $(1 - \cos^2 \theta) (1 + \cot^2 \theta) =$
(a) $\sin^2 \theta$ (b) 0 (c) 1 (d) $\tan^2 \theta$
- 4) $\sin(90^\circ - \theta) \cos \theta + \cos(90^\circ - \theta) \sin \theta =$
(a) 1 (b) 0 (c) 2 (d) -1
- 5) $1 - \frac{\sin^2 \theta}{1 + \cos \theta} =$
(a) $\cos \theta$ (b) $\tan \theta$ (c) $\cot \theta$ (d) $\operatorname{cosec} \theta$

Part-B

5 x 2 = 10

- 6) Prove the identity $\frac{\sin \theta}{\operatorname{cosec} \theta} + \frac{\cos \theta}{\sec \theta} = 1$
- 7) Prove the identity $\sqrt{\frac{1 - \cos \theta}{1 + \cos \theta}} = \operatorname{cosec} \theta - \cot \theta$
- 8) Prove the identity $(\sin^6 \theta + \cos^6 \theta) = 1 - 3 \sin^2 \theta \cos^2 \theta$
- 9) Prove the identity $\frac{\sin \theta - 2 \sin^3 \theta}{2 \cos^3 \theta - \cos \theta} = \tan \theta$
- 10) Prove that $\frac{1 + \sec \theta}{\sec \theta} = \frac{\sin^2 \theta}{1 - \cos \theta}$

Part-C

5 x 5 = 25

- 11) Prove the identity $[\operatorname{cosec}(90^\circ - \theta) - \sin(90^\circ - \theta)][\operatorname{cosec} \theta - \sin \theta][\tan \theta + \cot \theta] = 1$
- 12) Prove that $\frac{\tan \theta + \sec \theta - 1}{\tan \theta - \sec \theta + 1} = \frac{1 + \sin \theta}{\cos \theta}$
- 13) Prove the identity $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \tan \theta + \cot \theta$
- 14) Prove the identity $(\sin \theta + \operatorname{cosec} \theta)^2 + (\cos \theta + \sec \theta)^2 = 7 + \tan^2 \theta + \cot^2 \theta$
- 15) a) Prove the identity $\frac{\sec \theta - \tan \theta}{\sec \theta + \tan \theta} = 1 - 2 \sec \theta \tan \theta + 2 \tan^2 \theta$

(OR)

- b) Prove the identity $(\operatorname{cosec} \theta - \sin \theta)(\sec \theta - \cos \theta) = \frac{1}{\tan \theta + \cot \theta}$
