

# Model Question Paper

## Trigonometry - Part IV

10th Standard

Maths

Reg.No. : 

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I. Answer all the questions.

II. Use blue pen only.

III. Question number 16 is compulsory.

Time : 01:00:00 Hrs

Total Marks : 40

5 x 1 = 5

### Part-A

- 1)  $(1 + \cot^2 \theta)(1 - \cos \theta)(1 + \cos \theta) =$   
(a)  $\tan^2 \theta - \sec^2 \theta$  (b)  $\sin^2 \theta - \cos^2 \theta$  (c)  $\sec^2 \theta - \tan^2 \theta$  (d)  $\cos^2 \theta - \sin^2 \theta$
- 2)  $(\cos^2 \theta - 1)(\cot^2 \theta + 1) + 1 =$   
(a) 1 (b) -1 (c) 2 (d) 0
- 3)  $\frac{1 + \tan^2 \theta}{1 + \cot^2 \theta} =$   
(a)  $\cos^2 \theta$  (b)  $\tan^2 \theta$  (c)  $\sin^2 \theta$  (d)  $\cot^2 \theta$
- 4)  $\sin^2 \theta + \frac{1}{1 + \tan^2 \theta} =$   
(a)  $\operatorname{cosec}^2 \theta + \cot^2 \theta$  (b)  $\operatorname{cosec}^2 \theta - \cot^2 \theta$  (c)  $\cot^2 \theta - \operatorname{cosec}^2 \theta$  (d)  $\sin^2 \theta - \cos^2 \theta$
- 5)  $9 \tan^2 \theta - 9 \sec^2 \theta =$   
(a) 1 (b) 0 (c) 9 (d) -9

### Part-B

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

5 x 2 = 10

### Part-C

- 11) Prove the following identities.  $(1 + \cot \theta - \operatorname{cosec} \theta)(1 + \tan \theta + \sec \theta) = 2$
- 12) Prove the following identities.  $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{1}{\sec \theta - \tan \theta}$
- 13) Prove the following identities.  $\frac{\tan \theta}{1 - \tan^2 \theta} = \frac{\sin \theta \sin(90^\circ - \theta)}{2 \sin^2(90^\circ - \theta) - 1}$
- 14) Prove the following identities.  $\frac{1}{\operatorname{cosec} \theta - \cot \theta} - \frac{1}{\sin \theta} = \frac{1}{\sin \theta} - \frac{1}{\operatorname{cosec} \theta + \cot \theta}$
- 15) a) Prove the following identities.  $\frac{\cot^2 \theta + \sec^2 \theta}{\tan^2 \theta + \operatorname{cosec}^2 \theta} = (\sin \theta \cos \theta)(\tan \theta + \cot \theta)$

5 x 5 = 25

(OR)

- b) Prove the following identities.  $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \operatorname{cosec} \theta$

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