

Model Question paper

Trigonometry 1

11th Standard

Maths

Reg.No. :

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I. Answer all the questions.

II. Use blue pen only.

Time : 02:30:00 Hrs

Total Marks : 75

10 x 1 = 10

Part - A

- 1) One radian is equal to (in terms of degree).....
(a) $\frac{180^\circ}{11}$ (b) $\frac{\pi}{180^\circ}$ (c) $\frac{180^\circ}{\pi}$ (d) $\frac{11}{180^\circ}$
- 2) An angle between 0° and -90° has its terminal side in.....
(a) 1 quadrant (b) III quadrant (c) IV quadrant (d) II quadrant
- 3) $\frac{1}{360}$ of a complete rotation clockwise is.....
(a) -1° (b) -360° (c) -90° (d) 1°
- 4) If the terminal side is collinear with the initial side in the opposite direction, then the angle included is.....
(a) 0° (b) 90° (c) 180° (d) 270°
- 5) Area of triangle ABC is.....
(a) $\frac{1}{2}abc \cos C$ (b) $\frac{1}{2}abs \sin C$ (c) $\frac{1}{2}abs \sin C$ (d) $\frac{1}{2}bcs \sin B$
- 6) The Babylonians divided the circle into how many days?
(a) 365 (b) 366 (c) 360 (d) $365\frac{1}{4}$
- 7) Which one of the following is true,
(a) $\cos(A+B) = \cos A + \cos B$ (b) $\cos(A-B) = \cos A - \cos B$ (c) $\cos(A-B) = \cos A + \cos B$ (d) $\cos(A+B) \neq \cos A + \cos B$
- 8) The value of $\frac{3\pi}{2}$ is
(a) 300° (b) 290° (c) $\frac{1080}{4}$ (d) none
- 9) The value of $\sin(-780^\circ)$ is
(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{2}{\sqrt{3}}$ (c) $-\frac{2}{\sqrt{3}}$ (d) $-\frac{\sqrt{3}}{2}$
- 10) One radian is equal to
(a) $56^\circ 16'$ (b) 0.01746 (c) $57^\circ 16'$ (d) $14^\circ 19'$

Part - B

10 x 2 = 20

- 11) Convert the following degree measure into radian measure. -320°
- 12) Find the degree measure corresponding to the following radian measure
 -3
- 13) Find the values of $\cos 75^\circ$
- 14) Prove that $\sin(45^\circ + A) - \cos(45^\circ + A) = \sqrt{2} \sin A$
- 15) Prove that $\sin A + \sin(120^\circ + A) + \sin(240^\circ + A) = 0$
- 16) Show that $\cot 75^\circ + \tan 75^\circ = 4$
- 17) Show that $\frac{\cos 29^\circ + \sin 29^\circ}{\cos 29^\circ - \sin 29^\circ} = \tan 74^\circ$
- 18) If $A + B + C = \pi$, prove that
 $\tan A + \tan B + \tan C = \tan A \tan B \tan C$
- 19) Find the principal value of the following equations
 $\sin \theta = \frac{1}{\sqrt{2}}$
- 20) Show that $\tan 75^\circ + \cot 75^\circ = 4$

Part - C

10 x 3 = 30

- 21) Express the following as functions of positive acute angles
 $\sin(-840^\circ)$
- 22) Express the following as functions of positive acute angles
 $\operatorname{cosec}(420^\circ)$
- 23) Prove that $\frac{\sin 300^\circ \cdot \tan 330^\circ \cdot \sec 420^\circ}{\cot 135^\circ \cdot \cos 210^\circ \cdot \operatorname{cosec} 315^\circ} = -\sqrt{\frac{2}{3}}$
- 24) Express the following as functions of A:
 $\tan(A - \frac{3\pi}{2})$
- 25) Prove that $\frac{\sin(180^\circ + A) \cdot \cos(90^\circ - A) \cdot \tan(270^\circ - A)}{\sec(540^\circ - A) \cdot \cos(360^\circ + A) \cdot \operatorname{cosec}(270^\circ + A)} = -\sin A \cos^2 A$
- 26) Find the values of: $\sin(240^\circ)$
- 27) Find the values of: $\operatorname{cosec}(-300^\circ)$
- 28) If A, B, C, D are angles of a cyclic quadrilateral prove that $\cos A + \cos B + \cos C + \cos D = 0$
- 29) Find the value of the following expressions:
 $\cos 45^\circ \cdot \cos 60^\circ - \sin 45^\circ \cdot \sin 60^\circ$

30) Prove that $\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$

Part - D

3 x 5 = 15

31) Prove that $(1 - \cos A + \tan A)(\sin A - \cos A) = \frac{\sec A}{\operatorname{cosec}^2 A} - \frac{\operatorname{cosec} A}{\sec^2 A}$

32) That $\sqrt{\frac{1 - \cos A}{1 + \cos A}} = \csc A - \cot A$

33) Prove that $\cos(A - B) = \cos A \cos B + \sin A \sin B$

