

TEST NO. 5**(Ch.7, 12,(Theorum.#-4).13.3 (Def. of Ch-7,10,12)****MATHEMATICS (SCIENCE) 019-(10TH CLASS)**
Paper: V (Objective Type)**Time Allowed:15 Min.**
Maximum Marks: 15

- 1.1 If the rotation of the ray is clockwise, the angle is _____ in measure:
(a) Positive (b) Negative (c) Initial (d) Terminal
2. The circumference of a circle is divided into _____ degrees.
(a) 180° (b) 270° (c) 360° (d) 30°
3. One minute is denoted by:
(a) 1' (b) 1" (c) 1° (d) 60'
4. Formula $l = r\theta$ is true only when θ is in:
(a) Degree (b) Radian (c) Revolution (d) Minute
5. A part of the circumference of a circle is called a/an:
(a) Angle (b) Arc (c) Circumference (d) Radian
6. In a circle radius 10m, what is the length of an arc intercepted by a central angle of 60°:
(a) $\frac{\pi}{3}$ m (b) $\frac{3}{10\pi}$ m (c) $\frac{10\pi}{3}$ m (d) $\frac{\pi}{30}$ m
7. The formula of area of circular sector is:
(a) $l = r\theta$ (b) $r\theta$ (c) $\frac{1}{2}r\theta$ (d) $2r\theta$
8. If $\tan\theta = \sqrt{3}$ then $\theta =$ _____:
(a) 30° (b) 45° (c) 60° (d) 90°
9. If θ lies in 2nd (second) quadrant then $\sin \theta$ and $\operatorname{cosec} \theta$ are:
(a) Negative (b) Positive (c) Zero (d) Undefined
10. $\sec^2\theta - \tan^2\theta =$ _____.
(a) $\sec^2\theta$ (b) $\cos^2\theta$ (c) 1 (d) $\sin^2\theta$
11. The _____ of a given point on a line segment is the foot of perpendicular drawn from the point on that line segment.
(a) Position (b) Co-terminal
(c) Projection (d) Standard Position
12. Area of $\triangle ABC =$:
(a) $\frac{1}{2}(\text{Base})(\text{Altitude})$ (b) $2(\text{Base})(\text{Altitude})$
(c) $\frac{1}{2} \times \frac{\text{Base}}{\text{Altitude}}$ (d) $(\text{Base})(\text{Altitude})$
13. A line has only one point in common with a circle is called:
(a) Chord (b) Secant (c) Tangent (d) Sector
14. The angle subtended by an arc of a circle at its circumference is called:
(a) Minor Arc (b) Circum Angle
(c) Central Angle (d) Supplementary Angle
15. A quadrilateral is called _____ when a circle can be drawn through its four vertices:
(a) Cyclic (b) Central quadrilateral
(c) Non-Cyclic (d) Non-Central quadrilateral

TEST NO. 5**(Ch.7, 12,(Theorum.#-4).13.3 (Def. of Ch-7,10,12)****MATHEMATICS (SCIENCE) 019-(10TH CLASS)****Time Allowed:2:10 hours****Paper: V (Essay Type)****Maximum Marks: 60****(PART - I)****2. Write short answer to any SIX (6) questions:****12**

- (i) What is angle? Give its units.
- (ii) Locate -150° on XY - plane
- (iii) Express $60^\circ 30' 30''$ sexagesimal measure of angle in decimal form.
 $\frac{13\pi}{16}$
- (iv) Convert to degree.
- (v) Convert 3 radian to degree.
- (vi) Find the distance travelled by a cyclist moving in a circle of radius 15m, if he makes 3.5 resolutions.

$$\theta = \frac{1}{4} \text{ radian}$$

- (vii) Find r, when $l = 4\text{cm}$,
- (viii) The radius of a circle is $\sqrt{2}$ cm. A chord 2cm in length divides the circle into two segments.
- (ix) Prove that the angle of large segment is 45° .

3. Write short answer to any SIX (6) questions:**12**

- (i) In a circle of radius 12m, find the length of an arc which subtends a central angle $\theta = 15$ radian.
 $\cos = -\frac{2}{3}$
- (ii) If and terminal arm of the angle θ is in quadrant II, find the values of any three trigonometric functions.
- (iii) Write Pythagorean identities.
 $(\tan\theta + \cot\theta)\tan\theta = \sec^2\theta$
- (iv) Verify that
 $\frac{1 + \cos\theta}{\sin\theta} + \frac{\sin\theta}{1 + \cos\theta} = 2\operatorname{cosec}\theta$
- (v) Verify that
 $\frac{1}{1 - \cos\theta} + \frac{1}{1 + \cos\theta} = 2\operatorname{cosec}\theta$
- (vi) Verify that
 $\sqrt{\frac{\sec\theta + 1}{\sec\theta - 1}} = \frac{\sec\theta + 1}{\tan\theta}$
- (vii) Verify that
 $\frac{\sin\theta}{\cos\theta} + \cos\theta = \sec\theta$
- (viii) Verify that
- (ix) Show that parallelogram inscribe in a circle will be a rectangle.

4. Write short answer to any SIX (6) questions:**12**

- (i) Find the area of the sector with central angle of $\frac{\pi}{5}$ radian in a circle of radius 10 cm.
 $\tan^4\theta + \tan^2\theta = \operatorname{cosec}\theta$
- (ii) Verify that
- (iii) Find angle of elevation of the sun if a 6 feet man casts a 3.5 feet shadow.
 $\sin^3\theta = \sin\theta - \sin\theta \cos^2\theta$
- (iv) Prove that
- (v) How many minutes are in two right angles?
 $(1 - \sin^2\theta)(1 + \tan^2\theta) = 1$
- (vi)
- (vii) Define radian measure of an angle.
- (viii) What is Tangent
- (ix) Define the point of a tangent.

(PART – II)

Note : Attempt any THREE question in all. But question No.9 is Compulsory.

5. (a) Prove that $l = r\theta$. 4
(b) The given point P lies on the terminal side of θ . Find quadrant of θ and all six trigonometric ratios. 4
 $(\sqrt{2}, 1)$
 $\operatorname{cosec} \theta = \frac{13}{12}$
6. (a) If $\sec \theta > 0$, find the remaining trigonometric functions. 4
(b) Prove that $(\cot \theta + \operatorname{cosec} \theta)(\tan \theta - \sin \theta) = \sec \theta - \cos \theta$. 4
7. (a) A rocket is launched and climbs at a constant angle of 80° . Find the altitude of the rocket after it travels 5000 meter. 4
$$\frac{1 + \cos \theta}{\sin \theta} + \frac{\sin \theta}{1 + \cos \theta} = 2 \operatorname{cosec} \theta$$

(b) Verify the identities. 4
8. (a) A television antenna of 8 feet height is located on the top of a house. From a point on the ground the angle of elevation to the top of the house is 17° and the angle of elevation to the top of the antenna is 21.8° . Find the height of the house. 4
(b) Draw two equal circles of each radius 2.4cm. If the distance between their centers is 4 cm then draw their transverse tangents. 4
9. Prove that the opposite angles of any quadrilateral inscribed in a circle are supplementary. 8



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