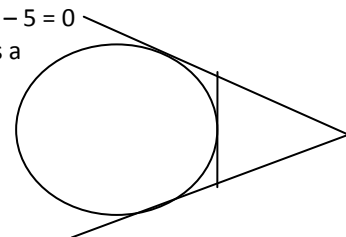


I. Choose The Correct Answer:

- Given $f(x) = (-1)^x$ is a function from N to Z. Then the range of f is
A) {1} B) Z C) N D) {1,-1}
- Which one of the following is not true?
A) Every function represents a sequence B) A sequence may have infinitely many terms
C) A sequence is a real valued function defined on N D) A sequence may have a finite number of terms
- The common ratio of the G.P a^{m-n}, a^m, a^{m+n} is
A) a^n B) a^m C) a^{-n} D) a^{-m}
- The system of equation $x - 4y = 8, 3x - 12y = 24$
A) has no solution B) has a unique solution C) has infinitely many solution
D) may or may not have a solution
- The lowest form of the rational expansion $\frac{x^3-27}{x^2-9}$
A) $x-3$ B) $x+3$ C) $\frac{x^2+3x+9}{x+3}$ D) $\frac{x+3}{x^2-3x+9}$
- $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$, then find the value of a, b, c, d are
A) -1, 0, 0, -1 B) 1, 0, 0, 1 C) -1, 0, 1, 0 D) 1, 0, 0, 1
- Area of the quadrilateral formed by the points (1, 1), (0, 1), (0, 0) and (1, 0) is
A) 4 Sq.units B) 2 Sq.units C) 1 Sq.units D) 8 Sq.units
- The equation of the straight line passing through the origin and perpendicular to the straight line $2x + 3y - 7 = 0$ is
A) $y + 5 = 0$ B) $2x + 3y = 0$ C) $3x - 2y = 0$ D) $y - 5 = 0$
- In the figure, PA and PB are tangents to the circle drawn from an external point P. Also CD is a tangent to the circle at Q. If PA = 8cm and CQ = 3cm, then PC is equal to
A) 5cm B) 38cm C) 11cm D) 24cm



- The perimeter of two similar triangles are 24cm and 18cm respectively. If one side of the first triangle is 8cm, then the corresponding side of the other triangle is
A) 4cm B) 3cm C) 9cm D) 6cm
- $9\tan^2\theta - 9\sec^2\theta =$
A) 1 B) 0 C) 9 D) -9
- If $x = a \sec\theta, y = b \tan\theta$, then the value of $\frac{x^2}{a^2} - \frac{y^2}{b^2} =$
A) 1 B) -1 C) $\tan^2\theta$ D) $\operatorname{cosec}^2\theta$
- Two right circular cones have equal radius. If their slant heights are the ratio 4:3, then their respective C.S.A are in the ratio
A) 4:3 B) 8:6 C) 3:4 D) 16:9
- Standard deviation of a collection of data is $2\sqrt{2}$. If each is multiplied by 3, then the standard deviation of the new data is
A) $6\sqrt{2}$ B) $4\sqrt{2}$ C) $9\sqrt{2}$ D) $\sqrt{12}$
- The probability that a student will score centum in mathematics is $4/5$. The probability that he will not score centum is
A) $2/5$ B) $1/5$ C) $4/5$ D) $3/5$

II. Answer any 9 out of 14 (Q.NO:16 to 29) and 30th question is compulsory:

10X2 = 20

- Given $P = \{a, b, c, d, e\}, Q = \{a, e, l, o, u\}$ and $R = \{a, c, e, g\}$. Verify the associative property of set intersection.
- If $X = \{10, 11, 12, 13, 14\}, Y = \{0, 1, 2, 3, 5\}$ determine which of the following relations from X and Y are functioning? State its type. (Give reason)
i) $f_1 = \{(10,1)(11,1)(12,1)(13,1)(14,1)\}$
ii) $f_2 = \{(10,0)(11,0)(12,1)(13,1)(14,2)\}$
iii) $f_3 = \{(10,1)(10,2)(12,3)(12,5)(14,0)\}$
- A group of 100 candidates have their average height 163.8cm with coefficient of variation 3.2. what is the Standard deviation of their height?
- The number of bacteria in a certain culture doubles every hour. If there were 30 bacteria present in the Culture initially, how many bacteria will present at the end of 14th hour?
- i) Find the G.C.D of $x^4 - 27a^3x, (x - 3a)^2$, ii) Find the L.C.M of $2x^2 - 18y^2, 5x^2y + 15xy^2, x^3 + 27y^3$
- If the sum and product of the roots of the quadratic equation $ax^2 - 5x + c = 0$ are both equal to 10, then find the Values of a and c.

