

ONE MARK & TWO MARKS SPECIAL TEST, 2011 - 2012

STANDARD X

Test No:5

Time : 1.30 hrs.]

MATHEMATICS

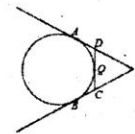
[Marks : 75

[FULL PORTION]

PART - I www.rktuitioncentre.blogspot.in 25X1=25

Note: Answer ALL the questions. Choose the correct answer and write the alphabet only :

- If $n(A) = 20$, $n(B) = 30$ and $n(A \cup B) = 40$, then $n(A \cap B)$ is equal to
a) 50 b) 10 c) 40 d) 70
- If the range of a function is a singleton set, then it is
a) a constant function b) an identity function c) a bijective function d) an one-one function
- $f = \{(x,2), (4,y)\}$ is an identity function. The values of 'x' and 'y' are
a) 2,4 b) -2,-4 c) 4,8 d) 1,2
- The next term of the sequence $\frac{1}{2}, \frac{1}{6}, \frac{1}{12}, \frac{1}{20}, \dots$ is
a) $\frac{1}{24}$ b) $\frac{1}{22}$ c) $\frac{1}{30}$ d) $\frac{1}{18}$
- If $x, 2x + 2, 3x + 3, \dots$ are in G.P. then $5x, 10x + 10, 15x + 15, \dots$ form
a) an A.P. b) a G.P. c) a constant sequence d) neither A.P. nor a G.P.
- If $6, a, b, -3, \dots$ are in A.P. then the value of $a + b$ is
a) 9 b) 0 c) 3 d) -3
- The remainder when $x^2 - 2x + 7$ is divided by $x + 4$ is
a) 28 b) 29 c) 30 d) 31
- A quadratic equation whose one root is 3 is
a) $x^2 - 6x - 5 = 0$ b) $x^2 + 6x - 5 = 0$ c) $x^2 - 5x - 6 = 0$ d) $x^2 - 5x + 6 = 0$
- The common factor of $x^2 - 7x + 10$ and $x^2 - 10x + 16$ is
a) $x - 2$ b) $x + 2$ c) $x - 8$ d) $x - 10$
- If $\begin{pmatrix} 3x + 7 & 5 \\ y + 1 & 2 - 3x \end{pmatrix} = \begin{pmatrix} 1 & y - 2 \\ 8 & 8 \end{pmatrix}$ then the values of 'x' and 'y' are
a) -2,7 b) $-\frac{1}{3}, 7$ c) $-\frac{1}{3}, -\frac{2}{3}$ d) 2, -7
- If A is of order 3×4 and B is of order 4×3 , then the order of BA is
a) 3×3 b) 4×4 c) 4×3 d) not defined
- The centroid of the triangle with vertices at $(-2, -5)$, $(-2, 12)$ and $(10, -1)$ is
a) (6,6) b) (4,4) c) (3,3) d) (2,2)
- The straight line $4x + 3y - 12 = 0$ intersects the y-axis at
a) (3,0) b) (0,4) c) (3,4) d) (0,-4)
- If the straight lines $3x + 6y + 7 = 0$ and $2x + ky = 5$ are perpendicular then the value of 'k' is
a) 1 b) -1 c) 2 d) -3
- A point P is 26 cm away from the centre O of a circle and PT is the tangent drawn from P to the circle is 10 cm, then OT is equal to
a) 36 cm b) 20 cm c) 18 cm d) 24 cm
- 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 = 8 cm and CQ = 3 cm, then PC is
a) 11 cm b) 5 cm c) 24 cm d) 38 cm
- $\sin(90^\circ - \theta) \cos \theta + \cos(90^\circ - \theta) \sin \theta =$
a) 1 b) 0 c) 2 d) -1
- A man is 28.5m away from a tower. His eye level above the ground is 1.5m. The angle of elevation of the tower from his eyes is 45° . Then the height of the tower is
a) 30 m b) 27.5 m c) 28.5 m d) 27 m
- The curved surface area of a right circular cylinder of radius 1 cm and height 1 cm is equal to
a) $\pi \text{ cm}^2$ b) $2\pi \text{ cm}^2$ c) $3\pi \text{ cm}^3$ d) 2 cm^2
- If the radius of a sphere is 2cm, then the curved surface area of the sphere is equal to
a) $8\pi \text{ cm}^2$ b) 16 cm^2 c) $12\pi \text{ cm}^2$ d) $16\pi \text{ cm}^2$
- The maximum volume of a cone that can be curved out of a solid hemisphere of radius 'r' units is (cu.units)
a) $3\pi r^2$ b) $3\pi r^3$ c) $\frac{\pi^2 h}{3}$ d) $\frac{\pi^3}{3}$
- For a collection of 11 items, $\sum x = 132$, then the arithmetic mean is
a) 11 b) 12 c) 14 d) 13



One-X-(Maths)

23. Standard deviation of a collection of data is $2\sqrt{2}$. If each value is multiplied by 3, then the standard deviation of the new data is
 a) $\sqrt{12}$ b) $4\sqrt{2}$ c) $6\sqrt{2}$ d) $9\sqrt{2}$
24. If ϕ is an impossible event, then $P(\phi) =$
 a) 1 b) $\frac{1}{4}$ c) 0 d) $\frac{1}{2}$
25. The probabilities of three mutually exclusive events A, B and C are given by $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{5}{12}$. Then $P(A \cup B \cup C)$ is
 a) $\frac{19}{12}$ b) $\frac{11}{12}$ c) $\frac{7}{12}$ d) 1

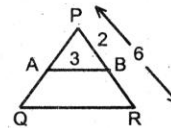
PART - II

Note: Answer ALL the questions :

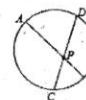
25X2=50

- For the given sets $A = \{-10, 0, 1, 9, 2, 4, 5\}$ and $B = \{-1, -2, 5, 6, 2, 3, 4\}$, verify that (i) set union is commutative.
- Let $A = \{10, 15, 20, 25, 30, 35, 40, 45, 50\}$, $B = \{1, 5, 10, 15, 20, 30\}$ and $C = \{7, 8, 15, 20, 35, 45, 48\}$. Verify $A \setminus (B \cap C) = (A \setminus B) \cup (A \setminus C)$.
- Let $A = \{1, 2, 3, 4, 5\}$, $B = N$ and $f: A \rightarrow B$ be defined by $f(x) = x^2$. Find the range of f .
- Find the number of terms of the arithmetic series $5 + 11 + 17 + \dots + 95$.
- If the n^{th} term of an A.P. is $t_n = 3 - 5n$, then find the sum of the first n terms.
- Find the sum of the series. $1^3 + 2^3 + 3^3 + \dots + 20^3$.
- Three chairs and two tables cost Rs.700 and five chairs and three tables cost Rs.1100. What is the cost of each ?
- Find the zeros of the quadratic polynomial $x^2 + 9x + 20$, and verify the basic relationships between the zeros and the coefficients.
- Solve : $\sqrt{24 - 10x} = 3 - 4x$, $3 - 4x > 0$.
- Find 'a' and 'b' if $a \begin{pmatrix} 2 \\ 3 \end{pmatrix} + b \begin{pmatrix} -1 \\ 1 \end{pmatrix} = \begin{pmatrix} 10 \\ 5 \end{pmatrix}$.
- If $A = \begin{pmatrix} 3 & 2 \\ 4 & 0 \end{pmatrix}$ and $B = \begin{pmatrix} 3 & 0 \\ 3 & 2 \end{pmatrix}$ then find AB and BA . Are they equal ?
- Find the coordinates of the point which divides the line segment joining $(3, 4)$ and $(-6, 2)$ in the ratio 3:2 externally.
- Find the slope of the straight line passing through the points $(3, -2)$ and $(-1, 4)$.
- Find the equation of straight line whose angle of inclination is 45° and y-intercept is $\frac{2}{5}$.

15. In $\triangle PQR$, $AB \parallel QR$. If AB is 3 cm, PB is 2 cm and PR is 6 cm, then find the length of QR .



16. In the adjoining figure, chords AB and CD intersect at P . If $AB = 16$ cm, $PD = 8$ cm, $PC = 6$ and $AP > PB$, then find AP .



- If $\theta = 45^\circ$ then find whether $\cot^2 \theta + \cos \theta = \sin^2 \theta$ is an identity or not.
- A ramp for unloading a moving truck, has an angle of elevation of 30° . If the top of the ramp is 0.9m above the ground level, then find the length of the ramp.
- If the total surface area a solid right circular cylinder is $200\pi \text{ cm}^2$ and its radius is 5cm, then find the sum of its height and radius.
- If the volume and the base area of a right circular cone are $48\pi \text{ cm}^3$ and $12\pi \text{ cm}^2$ respectively, then find the height of the cone.
- If the circumference at the base of a right circular cone and the slant height are $120\pi \text{ cm}$ and 10cm respectively, then find the curved surface area of the cone
- The S.D. of a data is 9.4 and the mean is 34. Find the coefficient of variation.
- For a collection of data if $\sum x = 35$, $n = 5$ and $\sum (x-9)^2 = 82$ then find $\sum x^2$.
- A fair die is thrown once. Find the probability of getting a prime or composite number
- Find the Probability that a leap year will have 53 Fridays or 53 Saturdays