XI MATHEMATICS

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2014 Supplementary

Choose the correct answer for each from the given options.

i. $\begin{vmatrix}2 & 1\\ 1 & 3\end{vmatrix}\begin{bmatrix}3 & 4\\ -1 & 2\end{bmatrix} =$:

a. $\begin{vmatrix}5 & 10\\ 0 & 10\end{vmatrix}$ b. $\begin{vmatrix}5 & 10\\ 0 & 10\end{vmatrix}$ c. $\boxed{\begin{vmatrix}15 & 20\\ -5 & 10\end{vmatrix}}$ d. none of these

ii. In a $\Delta ABC, a = b = c = x$, the $\Delta =$:

a. $\boxed{\frac{\sqrt{3}}{4}x^2}$ b. $\frac{\sqrt{3}}{3}x^2$ c. $\frac{\sqrt{3}}{2}x^2$ d. $\frac{\sqrt{3}}{6}x^2$

iii. The multiplicative inverse of $(1,0)$ is:

a. $(0,1)$ b. $(-1,0)$ c. $\boxed{(1,0)}$ d. $(0,0)$

iv. $\frac{(n-1)!}{(n+1)!} =$:

a. $\frac{1}{n+1}$ b. $\frac{n-1}{n+1}$ c. $\boxed{\frac{1}{n(n+1)}}$ d. none of these

v. If a complex number $z = x + iy$ is added to its conjugate, the result is:

a. $\boxed{\text{Purely real}}$ b. Purely Imaginary c. real or imaginary d. none of these

vi. The arithmetic mean between 5 and 10 is:

a. 5.5 b. 6.5 c. $\boxed{7.5}$ d. 8.5

vii. The value of $\tan\theta$ is positive in:

a. 1st & 4th quadrant b. $\boxed{1^{st} \text{ and } 3^{rd} \text{ quadrant}}$ c. 2nd and 3rd quadrant d. 3rd and 4th quadrant

viii. The chance of winning 5 or 4 in a throw of a die whose faces are numbered from 1 to 6 is:

a. $\frac{1}{6}$ b. $\boxed{\frac{1}{3}}$ c. $\frac{1}{2}$ d. $\frac{1}{4}$

ix. The matrix $\begin{bmatrix}2 & 0\\ 0 & -2\end{bmatrix}$ is:

a. $\boxed{\text{Diagonal}}$ b. Scalar c. Unit d. Null

x. The angle of $\frac{\pi}{3}$ radian is equal to:

a. 120^0 b. 150^0 c. $\boxed{60^0}$ d. 30^0

xi. The coefficient of 1st term in the Binomial expansion of $(x + a)^8$ is:

a. $\boxed{8_{C_0}}$ b. 1_{C_8} c. 8_{C_8} d. 1_{C_1}

xii. If $\begin{bmatrix}1 & 0 & 0\\ 0 & 5 & k\\ -1 & 1 & 2\end{bmatrix}$ is a singular matrix, then the value of k is:

a. $\boxed{10}$ b. 5 c. 2 d. 1

xiii. The area of ΔABC is:

a. $\boxed{\frac{1}{2}bc\sin\alpha}$ b. $\frac{1}{2}bc\cos\alpha$ c. $\frac{1}{2}abc\sin\alpha$ d. $\frac{1}{2}abc\cos\alpha$

xiv. The circum-radius of ΔABC is:

a. $\frac{4\Delta}{abc}$ b. $\frac{\Delta}{2s}$ c. $\boxed{\frac{abc}{4\Delta}}$ d. $s(s-a)(s-b)(s-c)$

xv. If roots of a quadratic equation are 2 and -2 then the equation is:

a. $\boxed{x^2 - 4 = 0}$ b. $x^2 + 4 = 0$ c. $x^2 + 2 = 0$ d. $x^2 - 2 = 0$

xvi. The nth term of the sequence 2,4,6,8, . . . ,n is:

a. n b. $\frac{n}{n+1}$ c. $2n + 1$ d. $\boxed{2n}$

xvii. $(i)^{-8}+\omega^8 =$:

a. 2 b. $1 + \omega$ c. $\boxed{1 + \omega^2}$ d. none of these

xviii. $1 + \cos\theta =$:

a. $2\sin^2\frac{\theta}{2}$ b. $2\cos^2\theta$ c. $2\sin^2\theta$ d. $\boxed{2\cos^2\frac{\theta}{2}}$

xix. The value of $\binom{5}{2,\ 2}$ is:

a. $\boxed{60}$ b. 50 c. 40 d. 30

xx. If $(a + b)^{2n+4}\ \forall\ n \in \mathbb{N}$, its middle term is:

a. $(2n + 1)^{th}$ term b. $\boxed{(n + 3)^{th}\text{ term}}$ c. $(n + 1)^{th}$term d. $(n + 2)^{th}$term

2014 ANNUAL

Choose the correct answer for each from the given options.

i. If $sin\theta > 0$ and $sec\theta < 0$, then $\rho(\theta)$ lies in this quadrant:

a. First b. $\boxed{Second}$ c. Third d. Fourth

ii. The total number of terms in the binomial expansion of $\left(y^2 + \frac{b^2}{y^2}\right)^n$ are:

a. n b. n-1 c. $\boxed{n + 1}$ d. 2n

iii. The roots of a quadratic equation are equal if:

a. $b^2 - 4ac > 0$ b. $b^2 - 4ac < 0$ c. $\boxed{b^2 - 4ac = 0}$ d. $b^2 - 4ac$ is a perfect square

iv. The H.M. of 2 and 5 is:

a. $\frac{7}{2}$ b. $\pm\sqrt{10}$ c. 0 d. $\boxed{\frac{20}{7}}$

v. The real part of $(2i - 3)i$ is:

a. 2 b. $\boxed{-2}$ c. -3 d. 3

vi. $tan(180^0 - \theta) =$:

a. $tan\theta$ b. $\boxed{-tan\theta}$ c. $cot\theta$ d. $-cot\theta$

vii. The value of $8_{P_2} =$

a. 66 b. 76 c. $\boxed{56}$ d. 86

viii. The multiplicative inverse of $(-3,8)$ is:

a. $(3,-8)$ b. $\left(-\frac{1}{3},\frac{1}{8}\right)$ c. $\left(\frac{1}{3},-\frac{1}{8}\right)$ d. $\boxed{\left(-\frac{3}{73},-\frac{8}{73}\right)}$

ix. $\cos(90^0 - \alpha) =$:

a. $\boxed{sin\alpha}$ b. $cos\alpha$ c. $-cos\alpha$ d. $-sin\alpha$

x. If $|x| < 1$, then $1 + 2x + 3x^2 + 4x^3 + \ldots$ is equal to:

a. $\boxed{(1 - x)^{-2}}$ b. $(1 + x)^{-2}$ c. $(1 - x)^{-1}$ d. $(1 + x)^{-1}$

xi. $\binom{5}{3,\ 2} =$:

a. 8 b. 9 c. $\boxed{10}$ d. 20

xii. If ω is a complex cube root of unity then $(1 + \omega + \omega^2)^2$ will be equal to:

a. $\boxed{0}$ b. 1 c. ω^2 d. 4

xiii. If order of matrices *A* and *B* respectively are *2 x 3* and 3 *x* 4 than order of *AB*:

a. 2×2 b. 3×3 c. $\boxed{2 \times 4}$ d. 4×2

xiv. If $\begin{bmatrix} 4 & 2 \\ 3 & \lambda \end{bmatrix}$ is a singular matrix, then $\lambda =$:

a. 6 b. ± 5 c. $\boxed{\frac{3}{2}}$ d. $\frac{2}{3}$

xv. $\frac{n!}{(n+1)!} =$:

a. n b. n+1 c. $\frac{1}{n}$ d. $\boxed{\frac{1}{n+1}}$

xvi. The period of $tanx$ is:

a. $\boxed{\pi}$ b. $\frac{\pi}{2}$ c. 2π d. none of these

xvii. $\sum n^3 =$

a. $\boxed{\frac{n^2(n+1)^2}{4}}$ b. $\frac{n^3(n+1)^3}{8}$ c. $\frac{n(n+1)}{2}$ d. none of these

xviii. The middle term in the expansion of $\left(x - \frac{1}{x}\right)^{20}$ is:

a. 9^{th} b. 10^{th} c. $\boxed{11^{th}}$ d. 12^{th}

xix. If a balanced die is rolled, then the probability of getting 3 is:

a. $\frac{2}{3}$ b. $\frac{3}{2}$ c. $\frac{1}{3}$ d. $\boxed{\frac{1}{6}}$

xx. $\frac{1}{1+\tan^2\theta} =$:

a. $\sec^2\theta$ b. $\boxed{\cos^2\theta}$ c. $\sin^2\theta$ d. $\cot^2\theta$

2013 ANNUAL

Choose the correct answer for each from the given options.

xxi. If the sides of a triangle are 5,6 and 7 units, the 2s is:

a. 6 b. 9 c. $\boxed{18}$ d. 27

xxii. Area of triangle ABC is:

a. $\frac{1}{2}absin\beta$ b. $\boxed{\frac{1}{2}bcsin\alpha}$ c. $\frac{1}{2}acsin\gamma$ d. $\frac{1}{2}bcsin\beta$

xxiii. $\frac{(n+1)!}{n!} =$

a. $\frac{n+1}{n}$ b. $\boxed{n+1}$ c. $n(n+1)$ d. $(n+1)!$

xxiv. If the roots of the equation $ax^2 + bx + c = 0$ are equal then $b^2 - 4ac$ is:

a. Positive b. negative c. Perfect squarte d. $\boxed{zero}$

xxv. If A and B are any two sets, then $(AUB)' =$

a. A'UB' b. $\boxed{A' \cap B'}$ c. $A \cap B$ d. none of these

xxvi. The multiplicative inverse of (a, b) is:

a. $\left(\frac{1}{a}, \frac{1}{b}\right)$ b. $\left(-\frac{1}{a}, -\frac{1}{b}\right)$ c. $\boxed{\left(\frac{a}{a^2+b^2}, -\frac{b}{a^2+b^2}\right)}$ d. $\left(\frac{a}{a^2+b^2}, -\frac{b}{a^2+b^2}\right)$

xxvii. If an equation, has the roots $\frac{1}{2}$ and $-\frac{1}{6}$, the the equation is:

a. $12x^2 - 4x - 1 = 0$ b. $x^2 - 6x + 2 = 0$ c. $x^2 + 6x - 2 = 0$ d. $\boxed{12x^2 + 4x - 1 = 0}$

xxviii. A matrix, in which the number of rows is equal to the number of columns, is called:

a. Identity matrix b. Diagonal matrix c. $\boxed{Square\ matrix}$ d. Scalar matrix

xxix. If $z = -3i + 4$ the $\bar{z} =$

a. $-3i - 4$ b. $\boxed{-3i + 4}$ c. $3i + 4$ d. $\frac{1}{-3i+4}$

xxx. If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & \omega & 0 \\ 0 & 0 & \omega^2 \end{bmatrix}$ then $|A| =$:

a. $\boxed{1}$ b. ω c. ω^2 d. -1

xxxi. If H is the Harmonic mean between a and b, then $H =$:

a. $\frac{a+b}{2}$ b. $\sqrt{ab}$ c. $\boxed{\frac{2ab}{a+b}}$ d. None

xxxii. A die is rolled once, the probability of getting a number 4 is:

a. $\boxed{\frac{1}{6}}$ b. $\frac{1}{3}$ c. $\frac{1}{2}$ d. $\frac{2}{3}$

xxxiii. If $cos\theta > 0$ and $sin\theta < 0$, then $\rho(\theta)$ lies in:

a. Ist quadrant b. $2nd\ quadrant$ c. $3rd\ quadrant$ d. $\boxed{4th\ quadrant}$

xxxiv. $tan\theta cos\theta =$

a. $\cos\theta$ b. $\boxed{sin\theta}$ c. $\sec\theta$ d. $\operatorname{cosec}\theta$

xxxv. $\tan(180^0 - \theta) =$:

a. $\tan\theta$ b. $-cot\theta$ c. $cot\theta$ d. $\boxed{-tan\theta}$

xxxvi. $cosU - cosV =$

a. $2\sin\frac{U+V}{2}cos\frac{U-V}{2}$ b. $2\cos\frac{U+V}{2}sin\frac{U-V}{2}$ c. $2\cos\frac{U+V}{2}cos\frac{U-V}{2}$ d. $\boxed{-2\sin\frac{U+V}{2}sin\frac{U-V}{2}}$

xxxvii. Magnitude of $3 - 4i$ is:

a. 25 b. 1 c. 9 d. $\boxed{5}$

xxxviii. The real part and imaginary part of $\frac{2-i}{3}$ are respectively:

a. $-\frac{2}{3}\ and \frac{1}{3}$ b. $\boxed{\frac{2}{3}\ and -\frac{1}{3}}$ c. $-\frac{1}{3}\ and -\frac{2}{3}$ d. $-\frac{1}{3}\ and \frac{2}{3}$

xxxix. The middle term in the expansion of $\left(x - \frac{1}{x}\right)^{2n}$ is:

a. $(2n+1)^{th}$ term b. $\boxed{(n+1)^{th}\ term}$ c. $(2n+2)^{th}$ term d. $(n+2)^{th}$ term

xl. The period of $cos\theta$ is:

a. π b. $\boxed{2\pi}$ c. 4π d. $\frac{\pi}{2}$

2012 ANNUAL

Choose the correct answer for each from the given options.

i. A square matrix is said to be a singular if:

a. $\boxed{|A| = 0}$ b. $A = 0$ c. $|A| = 1$ d. none of these

ii. The probability of getting a head in single toss of a coin is:

a. 0 b. 1 c. $\boxed{\frac{1}{2}}$ d. $-\frac{1}{2}$

iii. $\binom{5}{3,2} = \frac{5!}{3!\times 2!} = \frac{5.4.3!}{3!\times 2} = \mathbf{10}$

a. 9 b. $\boxed{10}$ c. 20 d. 8

iv. If R is the circum radius of a circum circle the $R =$

a. $\frac{\Delta}{s}$ b. $\frac{\Delta}{s-a}$ c. $\boxed{\frac{abc}{4\Delta}}$ d. $\frac{4\Delta}{abc}$

v. The period of $tan\theta$ is:

a. $\frac{\pi}{2}$ b. 2π c. $\frac{3\pi}{2}$ d. $\boxed{\pi}$

vi. $\frac{1}{1+tan^2\theta} =$

a. $-sec^2\theta$ b. $\boxed{cos^2\theta}$ c. $sec^2\theta$ d. $cot^2\theta$

vii. If $(x+3, 3) = (-5, 3)$, then value of x is:

a. -7 b. -2 c. $\boxed{-8}$ d. -5

viii. If $A = \{2,3\}$ and $B = \{1,2\}$ then $A - B$ is equal to:

a. $\{1,1\}$ b. $\{0, 3\}$ c. $\boxed{\{3\}}$ d. $\{2\}$

ix. If the roots of the equation $ax^2 + bx + c = 0$ are equal then $b^2 - 4ac$ is:

a. Greater than zero b. less than zero c. $\boxed{equal\ to\ zero}$ d. equal to one

x. The matrix $\begin{bmatrix} \sqrt{3} & 0 & 0 \\ 0 & \sqrt{3} & 0 \\ 0 & 0 & \sqrt{3} \end{bmatrix}$ is a:

a. Diagonal matrix b. $\boxed{Scalar\ matrix}$ c. Unit matrix d. Null matrix

xi. The matrix $\begin{bmatrix} \lambda & 3 \\ 2 & 4 \end{bmatrix}$ is a singular matrix, then the value of λ is:

a. $\frac{2}{3}$ b. $\frac{4}{3}$ c. $\boxed{\frac{3}{2}}$ d. $-\frac{3}{2}$

xii. The value of ${}^5P_3$ is:

a. 120 b. $\boxed{60}$ c. 20 d. 80

xiii. $\frac{(n+1)!}{(n-1)!} =$

a. n b. $n-1$ c. $n+1$ d. $\boxed{n(n+1)}$

xiv. If n is a natural number, the middle term in the expansion of $(a+b)^{2n}$ is:

a. $\left(\frac{n}{2}\right)^{th}$ term b. $\left(\frac{n+2}{2}\right)^{th}$ term c. $\boxed{(n+1)^{th}\ term}$ d. $\left(\frac{2n-1}{2}\right)^{th}$ term

xv. If the sides of a triangle are 3,4 and 5 units, then s is:

a. 4 b. 12 c. 5 d. $\boxed{6}$

xvi. $Cot(-\theta) =$:

a. $\boxed{-Cot\theta}$ b. $-tan\theta$ c. $\frac{1}{Cot\theta}$ d. $\frac{1}{tan\theta}$

xvii. The multiplicative inverse of (c, d) is equal to:

a. $\left(\frac{1}{c^2}, \frac{1}{c^2}\right)$ b. $\boxed{\left(\frac{c}{c^2+d^2}, \frac{-d}{c^2+d^2}\right)}$ c. $\left(\frac{c}{d}, \frac{d}{c}\right)$ d. $\left(\frac{1}{c}, \frac{1}{d}\right)$

xviii. If $-4\ and\ 8$ are the roots of quadratic equation then the equation is:

a. $x^2 - 4x - 32 = 0$ b. $\boxed{x^2 + 4x - 32 = 0}$ c. $x^2 - 4x + 32 = 0$ d. $x^2 + 4x + 32 = 0$

xix. $\omega + \omega^2 =$:

a. ω b. 1 c. $\boxed{-1}$ d. 0

xx. The sum of the roots of $12x^2 - 15x + 4 = 0$ is:

a. $-\frac{4}{3}$ b. $\boxed{\frac{5}{4}}$ c. $\frac{4}{3}$ d. $-\frac{1}{3}$

2011 ANNUAL

Choose the correct answer for each from the given options.

i. If $2^{2x+3} = 32$ the $x =$:

a. 2 b. 3 c. $\boxed{1}$ d. 4

ii. If A is a non-singular matrix the $A^{-1} =$:

a. $\frac{Adj\ A}{A}$ b. $\boxed{\frac{Adj\ A}{|A|}}$ c. $\frac{|\ Adj\ A\ |}{A}$ d. $|A|AdjA$

iii. If H is the harmonic mean between a and b the $H =$:

a. $\frac{2(a+b)}{ab}$ b. $\frac{a+b}{2ab}$ c. $\boxed{\frac{2ab}{a+b}}$ d. $\frac{ab}{a+b}$

iv. ${}^nC_r =$: $\boxed{Note: n_{P_r} = \frac{n!}{(n-r)!}\ and\ n_{C_r} = \frac{n!}{r!(n-r)!}}$

a. $\boxed{\frac{n!}{r!(n-r)!}}$ b. $\frac{n!}{(n-r)!}$ c. $\frac{n!}{r!}$ d. $\frac{(n-r)!r!}{n!}$

v. $\frac{(n+1)!}{(n-1)!} =$

a. $\boxed{n(n+1)}$ b. $(n+1)!$ c. $n!$ d. $\frac{n+1}{n-1}$

vi. The middle term in the expansion of $(a+b)^{2n}$ is:

a. n^{th} term b. $\boxed{(n+1)^{th}\ term}$ c. $(2n-1)^{th}$ term d. $(2n+1)^{th}$term

vii. If $tan\theta = -\frac{3}{4}$ and $sin\theta$ is negative then $\rho(\theta)$ lies in:

a. 1st quadrant b. 2nd quadrant c. 3rd quadrant d. $\boxed{4th\ quadrant}$

viii. If the sides of the triangle are 3,4,5 units the $s =$:

a. 15 b. $\boxed{6}$ c. 12 d. 30

ix. $\frac{2\pi}{3}$ radians in degree is equal to:

a. 90^0 b. $\boxed{120^0}$ c. 60^0 d. 150^0

x. $cosU + cosV =$:

a. $cos\frac{U+V}{2}cos\frac{U-V}{2}$ b. $2cos\frac{U+V}{2}sin\frac{U-V}{2}$ c. $\boxed{2cos\frac{U+V}{2}cos\frac{U-V}{2}}$ d. $2sin\frac{U+V}{2}cos\frac{U-V}{2}$

xi. If a balanced die is rolled then the probability of getting 2 or 5 is:

a. $\frac{1}{2}$ b. $\boxed{\frac{1}{3}}$ c. $\frac{1}{6}$ d. $\frac{2}{5}$

xii. If $sin\theta = 0$, then θ is equal to:

a. $\boxed{2n\pi, n \in \mathbb{Z}}$ b. $(2n+1)\pi, n \in \mathbb{Z}$ c. $n\pi, n \in \mathbb{Z}$ d. $n\frac{\pi}{2}, n \in \mathbb{Z}$

xiii. If $A = \{0,1\}$, $B = \{1,2\}$ and $C = \{2,3\}$ then $A \times (B \cap C) =$:

a. $\emptyset$ b. $\{(1,3),(0,1)\}$ c. $\boxed{\{(0,2),(1,2)\}}$ d. $\{(2,3),(1,1)\}$

xiv. $(a,b)(c,d) =$:

a. $\boxed{(ac-bd, ad+bc)}$ b. (ac, bd) c. $(ac+bd, ad-bc)$ d. (ad, bc)

xv. The real and imaginary parts of $i(2-3i)$ are:

a. $-3\ and\ 2$ b. $\boxed{3\ and\ 2}$ c. $2\ and\ 3$ d. $-2\ and\ -3$

xvi. The roots of the equation $ax^2 + bx + c = 0$ are real and distinct, if $b^2 - 4ac$ is:

a. 0 b. $\boxed{positive}$ c. negative d. non zero

xvii. The product of the roots of the equation $3x^2 - 5x + 2 = 0$ is:

a. $\frac{3}{5}$ b. $\boxed{\frac{2}{3}}$ c. $\frac{3}{2}$ d. $-\frac{5}{3}$

xviii. If ω is a complex cube root of unity the $\omega^{16} =$:

a. 0 b. ω^2 c. $\boxed{\omega}$ d. 1

xix. If $z = a + ib$ the $|z| =$:

a. $\sqrt{a-b}$ b. $\sqrt{a^2-b^2}$ c. $\boxed{\sqrt{a^2+b^2}}$ d. $\sqrt{a+b}$

xx. If $\begin{bmatrix} 2\lambda & 3 \\ 4 & 2 \end{bmatrix}$ is a singular matrix then value of λ is:

a. $\boxed{3}$ b. 2 c. $\frac{1}{2}$ d. 4

2010 ANNUAL

Choose the correct answer for each from the given options.

i. If the sides of a triangle are 2, 3 and 5, then $s =$:

a. 30 b. 25 c. $\boxed{5}$ d. 10

ii. If a,b,c are the sides of a triangle ABC, the 'r' is:

a. $\frac{abc}{4}$ b. $\frac{4\Delta}{abc}$ c. $\boxed{\frac{\Delta}{s}}$ d. $\frac{abc}{4\Delta}$

iii. The law of cosine, when $\angle B$ is in the standard position is:

a. $a^2 = b^2 + c^2 - 2bccos\alpha$ b. $\boxed{b^2 = c^2 + a^2 - 2accos\beta}$ c. $c^2 = a^2 + b^2 - 2accos\gamma$ d. $cos\beta = a^2 + c^2 - b + 2ac$

iv. $\frac{(n+1)!}{(n-1)!} =$

a. $\boxed{n(n+1)}$ b. $(n+1)!$ c. $n(n+1)!$ d. $\frac{n+1}{n-1}$

v. The real and imaginary part of $i(3-2i)$ are respectively:

a. $-2\ and\ 3$ b. $2\ and\ -3$ c. $\boxed{2\ and\ 3}$ d. $-3\ and\ -2$

vi. The roots of the equation $ax^2+bx+c=0$ are complex if b^2-4ac is:

a. $\boxed{negative}$ b. positive c. 0 d. perfect square

vii. If ω is the cube root of unity, then $\omega^4 =$:

a. $\boxed{\omega}$ b. 0 c. ω^2 d. 1

viii. For the equation $px^2+qx+r=0$, then the sum of the roots is:

a. $\boxed{-\frac{q}{p}}$ b. $\frac{q}{p}$ c. $\frac{p}{q}$ d. $-\frac{p}{q}$

ix. If the matrix $\begin{bmatrix}1 & 2\\ 3 & \lambda\end{bmatrix}$ is a singular matrix, then value of λ is:

a. $\frac{1}{6}$ b. $\boxed{6}$ c. -6 d. 5

x. If 4, a, 16 are in G.P., then the value of 'a' is:

a. 64 b. $\boxed{\pm 8}$ c. $\sqrt{8}$ d. $\pm\sqrt{8}$

xi. The H.M. between p and q is:

a. $\frac{p+q}{2}$ b. $\frac{p+q}{pq}$ c. $\boxed{\frac{2pq}{p+q}}$ d. $\frac{q}{p+q}$

xii. The value of $\binom{5}{3,2}$ is:

a. $\boxed{10}$ b. $\frac{5}{6}$ c. 1 d. 20

xiii. The probability of getting the tail in a single toss of a coin is:

a. $\frac{1}{3}$ b. $\boxed{\frac{1}{2}}$ c. $\frac{2}{3}$ d. 2

xiv. The value of $^{13}C_{11}$ is:

a. 77 b. 1! c. 13! d. $\boxed{78}$

xv. $|I_3|$ equal to:

a. -1 b. 0 c. $\boxed{1}$ d. 3

xvi. The number of terms in the binomial expansion of $(3x+2y)^9$ is:

a. 9 b. $\boxed{10}$ c. 11 d. 8

xvii. If $tan\theta = -\frac{1}{3}$ and $sin\theta$ is negative, $p(\theta)$ lies in this quadrant.

a. 3rd quadrant b. 1st quadrant c. $\boxed{4th\ quadrant}$ d. 2nd quadrant

xviii. $\tan(-\theta) =$:

a. $\frac{1}{tan\theta}$ b. $\boxed{-tan\theta}$ c. $-cot\theta$ d. $\frac{1}{cot\theta}$

xix. The period of $cos\theta$ is:

a. $\frac{3\pi}{2}$ b. $\frac{\pi}{2}$ c. $\boxed{2\pi}$ d. π

xx. The distance between $(1,1)$ and $(4,5)$ is:

a. 4 b. 3 c. $\boxed{5}$ d. 2

2009 ANNUAL

Choose the correct answer for each from the given options.

i. If $A=\{2,3\}$ and $B=\{1,2\}$, then $A-B =$.

a. $\{1,1\}$ b. $\{0,3\}$ c. $\boxed{\{3\}}$ d. $\{2\}$

ii. The multiplicative inverse of (c,d) is:

a. $\left(\frac{c}{d},\frac{d}{c}\right)$ b. $\left(\frac{1}{c},\frac{1}{d}\right)$ c. $\boxed{\left(\frac{c}{c^2+d^2},\frac{-d}{c^2+d^2}\right)}$ d. $\left(\frac{1}{c^2},\frac{-1}{d^2}\right)$

iii. The conjugate of a complex number (a,b) is:

a. $(-a,-b)$ b. $\boxed{(a,-b)}$ c. $(-a,b)$ d. $\left(\frac{a}{b},\frac{b}{a}\right)$

iv. If ω is a cube root of unity, then $\omega^{32} =$:

a. 0 b. $\boxed{\omega^2}$ c. ω d. 1

v. The value of $i^3 =$:

a. $\boxed{-i}$ b. 1 c. -1 d. i

vi. The roots of the equation $ax^2 + bx + c = 0$ are real and unequal then $b^2 - 4ac$ is:

a. Less than zero b. equal to zero c. $\boxed{greater\ than\ zero}$ d. equal to zero

vii. For the equation $lx^2 + mx + n = 0$, the sum of the roots $=$

a. $l + m$ b. $\frac{m}{l}$ c. $\frac{n}{l}$ d. $\boxed{-\frac{m}{l}}$

viii. If the order of two matrices A and B are $m \times n$ and $n \times p$ respectively, then the order of AB is:

a. $\boxed{m \times p}$ b. $p \times n$ c. $\boldsymbol{n \times p}$ d. $p \times m$

ix. A square matrix A is said to be singular if:

a. $A = 0$ b. $\boxed{|A| = 0}$ c. $|A| = 1$ d. $A = 1$

x. If A,G,H are respectively the A.M., G.M., and H.M. between a and b, then:

a. $A^2 = GH$ b. $G = \frac{A}{H}$ c. $G = \frac{A+H}{2}$ d. $\boxed{G^2 = AH}$

xi. The value of $^5P_3$ is:

a. 120 b. $\boxed{60}$ c. 20 d. 80

xii. $\frac{(n+1)!}{(n-1)!} =$

a. n b. $n - 1$ c. $n + 1$ d. $\boxed{n(n+1)}$

xiii. The middle term in the expansion of $(a + b)^{2n}$ is:

a. n^{th} term b. $\boxed{(n+1)^{th}\ term}$ c. $(2n-1)^{th}$ term d. $(2n+1)^{th}$term

xiv. The angle 330^0 in radians is:

a. $\frac{5\pi}{6}$ b. $\frac{7\pi}{6}$ c. $\boxed{\frac{11\pi}{6}}$ d. $\frac{13\pi}{6}$

xv. $\frac{1}{1+tan^2\theta} =$:

a. $cosec^2\theta$ b. $cot^2\theta$ c. $sec^2\theta$ d. $\boxed{cos^2\theta}$

xvi. The period of $tan\theta$ is:

a. $\frac{3\pi}{2}$ b. $\frac{\pi}{2}$ c. $\boxed{\pi}$ d. 2π

xvii. The area of the triangle ABC is given by:

a. $absin\alpha$ b. $\frac{1}{2}absin\beta$ c. $\boxed{\frac{1}{2}absin\gamma}$ d. $2absin\gamma$

xviii. The angle of $\frac{\pi}{90}$ radians is equal to:

a. 90^0 b. $\boxed{2^0}$ c. 1^0 d. 180^0

xix. The value of $0!$ is:

a. 0 b. $\boxed{1}$ c. ∞ d. none of them

xx. The area of a circle of radius r is:

a. $2\pi r$ b. $\frac{1}{2}\pi r^2$ c. $\boxed{\pi r^2}$ d. $2\pi r^2$