XI MATHEMATICS

101 MULTIPLE CHOICE ITEMS

SETS

1. If $B \subset A$, then which set is equal to the set $[A-(A' \cap B')]'$
   [ϕ , A', B' , U]

2. If four sets A,B,C and D are such that $A \subset B$, $B \subset D$, $C \subset D$,then which set is equal to (AUC) U (B-D)
   [A, B, C, D]

3. If $n(A) + n(B) = (a+b)^2$, $n(A-B) + n(B-A) = (a-b)^2$, then the value of n(AUB) is
   [2ab, a^2+b^2 , $2a^2b^2$, a^2-b^2]

4. If A and B are two non empty sets such that A-B = B-A , then the relation between the sets A and B is given by
   [A= B , $A \subset B$ and $A \neq B$, $B \subset A$ and $A \neq B$, $A \cap B = \phi$]

5. n(U) = 45 , n(A) = 30 , n(B) = 15 , n(A-B) = 13 , then n [(AUB)'] = ……..
   [28,25,17,15]

6. For any sets A and B, A-(A-B) = ……
   [A , $A \cap B$, B , B- A]

7. If $A= \{1/n : n \in N\}$, then which of the following is not an element of A
   [1, 0.1, 0.2, 0.3]

8. If A = { 1,2,3} , the number of elements in the power set of A is……..
   [3, 2, 2^3 , 3^2]

9. If A ⊂ B, then A∩B = ……..
   [A , B, U, ϕ]

10. (A∪B) – (A∩B) = ……
    [A-B , B-A , (A-B) ∪ (B-A) , None of these)

RELATIONS AND FUNCTIONS

1. Range of y = - $|x|$ is ……..
   [y≥ 0 , y≤ 0, y< 0 , $y > 0$]

2. If A = { 1,2,3} , B = {3,4} , then the number of relations from A to B is …..
   [2 , 3, 6, 64]

3. Let f(x) = $\sqrt{x+5}$, g(x) = $\sqrt{(25-x^2)}$ be the real functions. What is the value of $\frac{f}{g}(\frac{1}{2})$
   [$\frac{\sqrt{2}}{3}$, $\frac{2}{3}$,$\frac{3}{\sqrt{2}}$, $\frac{3}{2}$]

4. Domain of the function f(x) = $\frac{x+3}{x-5}$ is …….
   [R , R – {-3} , R – {5} , R – {-3, 5}]

5. The range of f(x) = sin 2x is .....
   [(-1,1), [-1,1] , (-2,2) , [-2,2]]

6. If f(x) = 2x – 5 , then f(1) + f(2) = …….
   [-1,-2, -3, -4]

7. Which of the following is a straight line?

   [f(x) = x , f(x) = x^2 , f(x) = e^x , f(x) = log x]

TRIGONOMETRY

1. If sin x = $\frac{3}{5}$, x lies in the second quadrant , then the value of tan x is
   [$\frac{-4}{5}$, $\frac{4}{5}$, $\frac{3}{4}$, $\frac{-3}{4}$]

2. The value of $sec^2x - tan^2x$ is
   [1, -1, 0, 2]

3. Sin x is positive when x takes the value
   [$\frac{7\pi}{8}$,$\frac{9\pi}{8}$,$\frac{11\,\pi}{8}$,$\frac{13\,\pi}{8}$]

4. Measure of sides of a triangle are 3,5 and 7 , then the greatest angle is
   [60^0 , 90^0 , 100^0 , 120^0]

5. Angles of a triangle are in AP , the least angle is 30^0 , then the greatest angle in radian measure is
   [$\frac{\pi}{2}$,$\frac{\pi}{3}$,$\frac{2\pi}{3}$,$\frac{5\pi}{3}$]

6. Cos ($\pi - x$) = …….
   [sin x , - sin x , cos x, - cos x]

7. General solution of sin x = $\frac{1}{\sqrt{2}}$ is
   [x = nπ +(-1)^n $\frac{\pi}{4}$, x = 2nπ $\pm$ $\frac{\pi}{4}$, x = nπ + $\frac{\pi}{4}$, x =2 nπ +(-1)^n $\frac{\pi}{4}$]

8. In a triangleABC a = 4 , b = 12 and angle B = 60^0 , then sin A = ……..
   [$\frac{1}{2\sqrt{3}}$, $\frac{-1}{2\sqrt{3}}$, $\frac{2}{\sqrt{3}}$,$\frac{\sqrt{3}}{2}$]

9. If A and B are acute angles such that tan A = $\frac{1}{2}$, tan B = $\frac{1}{3}$, then A+ B = ……..
   [$\frac{\pi}{4}$, $\frac{3\pi}{4}$,$\frac{5\pi}{4}$,$\frac{\pi}{6}$]

10. If Cot A = 1 , Cot B = 2 , then the value of Tan (A+B) is
    [$\frac{1}{2}$, 1, 2, 3]

COMPLEX NUMBERS AND QUADRATIC EQUATIONS

1. Conjugate of the complex number z = 4 – 5i is
   [5 – 4i , 5+ 4i , 4 + 5i , $\frac{1}{4-5i}$]

2. The value of i^5 +i^6 + i^7 + i^8 is
   [i , -i , 1,-1]

3. If z =1 + $\sqrt{3}$ i , then $|z|$ is
   [2 , $\sqrt{2}$,$\sqrt{3}$,$\frac{1}{2}$]

4. The argument of the complex number z =1+ i is
   [$\frac{\pi}{2}$,$\frac{\pi}{3}$,$\frac{\pi}{4}$,$\frac{\pi}{6}$]

5. The smallest positive integer for which $(1 + i)^{2n} = (1- i)^{2n}$

   [2, 4, 8, 12]

6. If $z \neq 0$, the value of arg z + arg $\bar{z}$ is
   [π , $\frac{\pi}{2}$, 0, -π]

7. The value of i^{-50} is
   [1, -1 , i , -i]

8. If z is a complex number and $\bar{z}$ is the conjugate of z, then the real part of z is
   [$\frac{z+\bar{z}}{2}$,$\frac{z-\bar{z}}{2}$,$\frac{z\bar{z}}{2}$,$\frac{z^2}{2}$]

9. Multiplicative inverse of z = 1- i
   [1+ i , $\frac{\sqrt{2}}{1+i}$, $\frac{1}{1-i}$,$\frac{1+i}{\sqrt{2}}$]

10. If z_1 and z_2 are two non zero complex numbers such that $|z_1 + z_2| = |z_1| + |z_2|$,
    then arg z_1 – arg z_2 is equal to
    [-π ,$\frac{-\pi}{2}$, 0, $\frac{\pi}{2}$]

PERMUTATIONS AND COMBINATIONS

1. The number of possible words that can be formed using the letters of the word " MATHEMATICS" IS
   [$\frac{11!}{2!2!2!}$,11! , $^{11}P_2$, $^{11}C_2$]

2. There are 4 letters and 4 direct envelopes. The number of ways in which every letter be put into a wrong envelope is
   [8, 9, 15, 16]

3. If ${}^{n}C_7 = {}^{n}C_8$, then n = …….
   [8, 9, 15, 56]

4. If ${}^{5}c_4 + {}^{5}C_3 = {}^{n}C_4$, then the value of n is
   [5, 6, 8, 9]

5. ${}^{n}P_r$ can be represented as
   [${}^{n}C_r$ x r! , $\frac{nCr}{r!}$, $\frac{nCr}{n!r!}$,$\frac{nCr}{n!}$]

6. Seven songs are rendered in a programme . In how many different orders could it be rendered ?
   [7 , 2^7 ,7^2 ,7!]

7. The number of diagonals in an octagon is
   [8, 16, 20, 28]

8. The value of ${}^{n}P_r$ and ${}^{n}C_r$ will be equal when
   [n = r ,r =$\frac{n}{2}$,r = 1 or n , r = 0 or 1]

9. It was found at a certain meeting, every member has shaken hand with every other member, 45 handshakes were interchanged. The number of members present in the meeting is
   [9, 10, 15, 22]

10. If ${}^{n}C_r = 3024$, ${}^{n}P_r = 126$, then the vaue of r is
    [1, 2, 3, 4]

BINOMIAL THEOREM

1. The number of terms in the expansion of $(x + 2y)^{10}$ is
   [9, 10, 11, 12]

2. The coefficient of x^8 in the expansion of $(1+x^2)^{10}$ is
   [$^{10}C_4$, $^{10}C_5$, $^{10}C_6$, $^{10}C_8$]

3. 4^{th} term in the expansion of $(\frac{x}{2} - \frac{2}{x})^6$ is
   [$^6C_3$, $^6C_3$ 2x , $^6C_3 4x^2$, $\frac{6C3}{2}$]

4. If the coefficients of second, third and the fourth terms in the expansion of $(1+x)^n$ are in AP, then the value of n is
   [4,5,6,7]

SEQUENCE AND SERIES

1. If the progressions 3,10,17,…….. and 63,65,67,……. are such that their n^{th} terms are equal, then the value of 'n' is
   [10, 11, 13, 15]

2. If the third term of a GP is 'p' , then the product of its first 5 terms is
   [p^2 , p^3 , p^4 , p^5]

3. If the sum to n terms of the series $2^3 + 4^3 + 6^3$ +…….. is 3548, then the value of n is
   [5, 6, 7, 8]

4. If $i^2 = -1$,then $i^2 + i^4 + i^6 +$ …….. (2n+1) terms is
   [-1, 0, 1, 2]

5. The 10th term of the GP $\frac{7}{2}, \frac{7}{4}, \frac{7}{8}$, ……. Is
   [$\frac{7}{64}$, $\frac{7}{128}$, $\frac{7}{256}$, $\frac{7}{512}$]

6. The number of terms required to give a sum of 120 in the GP 3, 3^2, 3^3 …… is
   [3,4,5,6]

7. The nth term of the series 3x8 + 6x11 + 9 x14 + …… is
   [n(n+5) , n(3n+5) , 3n(3n+5), 3n(n+5)]

8. The 3rd term of a GP is 24 and 6th term is 192, then common ratio is
   [2, 3, 4, 5]

9. The nth term of the series $1 + \frac{1+2}{2} + \frac{1+2+3}{3}$ +…… is
   [$\frac{n-1}{2}$, $\frac{n+1}{2}$, $\frac{n^2-1}{2}$, $\frac{n^2+1}{2}$]

10. The next term in the sequence 2,6,12,20,…….. is
    [24, 28, 30, 40]

STRAIGHT LINES

1. The slope of the line parallel to x axis is
   [1, -1, 0, 2]

2. If two lines with slopes m_1 and m_2 are perpendicular to each other, then $m_1 m_2$ = …….
   [-1, 0, 1, 2]

3. The equation of the line passing through the point (1,1) and parallel to the line 2x-3y+5 = 0 is
   [3x+2y+5=0 , 2x-3y+1=0 ,3x-2y-1=0 ,2x+3y-5 =0]

4. The distance between the parallel lines 2x+3y-2=0 and 2x+3y-4= 0 is
   [$\sqrt{13}$,$\frac{1}{\sqrt{13}}$, $\frac{2}{\sqrt{13}}$,$\frac{3}{\sqrt{13}}$]

5. Slope of the line 5x+3y+4=0 is
   [$\frac{3}{5}$,$\frac{5}{3}$,$\frac{-3}{5}$,$\frac{-5}{3}$]

6. The x intercept of the line 3x+2y+5=0 is
   [$\frac{-3}{2}$,$\frac{-5}{3}$, $\frac{-5}{2}$,$\frac{-2}{3}$]

7. The length of the perpendicular from the origin to the line $\frac{x}{3}$ - $\frac{y}{4}$ = 1 is
   [$\frac{11}{5}$,$\frac{5}{12}$,$\frac{12}{5}$,$\frac{-5}{12}$]

8. The line passes through (2,2) and is perpendicular to the line 3x+y=3, then its y intercept is
   [$\frac{1}{3}$,$\frac{2}{3}$,1,$\frac{4}{3}$]

9. The slope of the line passing through the points (1,3) and (3,6) is
   [$\frac{3}{2}$,$\frac{2}{3}$, $\frac{-3}{2}$,$\frac{-2}{3}$]

10. The distance between the points(-1,2) and(1, 4) is
    [2, 4, 8 , $\sqrt{8}$]

CONIC SECTIONS

1. The focus of the parabola $x^2 = 8y$ is
   [(2,0), (-2,0) ,(0,2), (0,-2)]

2. The centre of the circle $(x-\frac{1}{4})^2 + (y+\frac{1}{3})^2 = 4$ is
   [$(\frac{1}{4}, \frac{1}{3})$, $(\frac{-1}{4}, \frac{1}{3})$, $(\frac{1}{4}, \frac{-1}{3})$, $(\frac{-1}{4}, \frac{-1}{3})$]

3. The length of the minor axis of the ellipse $4x^2 + y^2 = 4$ is
   [1,2,4,8]

4. Length of the latus rectum of the hyperbola $9x^2 - 4y^2 = 36$ is
   [9, $\frac{8}{3}$,2,3]

5. Length of the latus rectum of the parabola $y^2 = 6x$ is
   [3, 6, 12, 24]

INTRODUCTION TO THREE DIMENSIONAL GEOMETRY

1. The x coordinate of any point in the YZ plane is
   [0,1,2,-1]

2. The coordinate planes divide the space into ……. Octants
   [4,6,8,10]

3. The coordinates of the point in x axis is of the form
   [(x,0,0) ,(x,y,0), (x,0,z), (0,y,z)]

4. The distance between the points (2,3,5) and (4,3,1) is
   [20, $\sqrt{20}$, 10, $\sqrt{10}$]

5. The centroid of the triangle formed by the vertices (5,7,3), (2,2,5)and (-1,0,4) is
   [(5,3,1) ,(2,3,4) ,(0,0,0), (5,3,0)]

LIMITS AND DERIVATIVES

1. $\lim_{x\to 3} x - 5$ = ……..
   [2, -2, 3, -5]

2. The value of $\lim_{x\to 2} \frac{x^2-4}{x^3-8}$
   [3, $\frac{1}{3}$, 1, 0]

3. $\lim_{x\to 0} \frac{\sin mx}{\sin nx}$ is
   [1, 0, $\frac{m}{n}$, mn]

4. $\lim_{x\to 0} \frac{\tan x}{x}$ = ……
   [-1, 0, 1, does not exist]

5. Derivative of y = ax+b is
   [a,b,a+b,0]

6. The value of $\lim_{x\to 0} \frac{e^{2x}-1}{x}$ is
   [1, 2,$\frac{1}{2}$, 4]

7. If f(x) = $3x^2$+ 4x+1 , then f'(1)+2f'(0) is
   [4, 8, 10,18]

8. $\lim_{x\to 0} \frac{\log_e(1+3x)}{x}$ = ……
   [0,1,2,3]

9. Derivative of cos x at x=0 is
   [-1,0,1,2]

10. Consider the function f(x) = $\begin{cases} a+bx\,, if\ x<1 \\ 4 \quad\quad\ , if\ x=1 \\ b-ax, if\ x>1 \end{cases}$

    If $\lim_{x\to 0} f(x)$ =f(1) then the possible values of a and b are

    [a=2, b=2 ; a=0,b=4 ; a=4, b=0 ; a=0,b=0]

STATISTICS

1. The mean of first three terms is 14 and the mean of the next two terms is 18 . the mean of all the five terms is
   [14.5 , 15, 15.2, 15.6]

2. The variance of the first n natural numbers is

   [$\frac{n^2-1}{12}$, $\frac{n^2-1}{6}$, $\frac{n^2+1}{12}$, $\frac{n^2+1}{6}$]

3. Average weight of 35 students in a class is 40 kg. if the weight of the teacher is included , the average increased by half, then the weight of the teacher is
   [45, 48, 58, 60]

4. The coefficient of variation can be calculated using the formula
   [$\frac{mean}{SD}$x100 , $\frac{SD}{mean}$x 100, $\frac{mean}{SD}$, $\frac{SD}{mean}$]

5. The mean of the data 6, 7, 10, 12, 13, 4, 8, 12 is
   [8,9,10,12]

PROBABILITY

1. If P(A) = 0.4, P(A') is
   [0.4, 0.5, 0.6.0.8]

2. If a coin is tossed twice, the probability that atleast one tail occurs is
   [$\frac{1}{4}$,$\frac{1}{2}$,$\frac{3}{4}$, 1]

3. If P(A) = 0.5, P(B)=0.35 and P(AUB) = 0.7, then P(A∩ B) is
   [0.15, 0.25, 0.85,0.45]

4. The probability of drawing a diamond card from a well shuffled deck of 52 cards is
   [$\frac{1}{13}$,$\frac{1}{52}$,$\frac{1}{4}$,$\frac{1}{2}$]

5. Two dice are drawn. The probability of getting a doublet is
   [$\frac{1}{36}$,$\frac{1}{6}$,$\frac{5}{6}$,$\frac{1}{2}$]

Prepared by
NISHA K U