|  |
| --- |
| Q.No.1      (30 x 1 M) |
| **1:** The coefficient of in the polynomial  is |
| |  |  | | --- | --- | | **a)** |  |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** | none of these | |
| **2:** The number of 5 digit number of the form abcba in which a < b is |
| |  |  | | --- | --- | | **a)** | 320 |  |  |  | | --- | --- | | **b)** | 340 |  |  |  | | --- | --- | | **c)** | 360 |  |  |  | | --- | --- | | **d)** | 380 | |
| **3:** The area bounded by and the y-axis is [.] denotes the greatest integer function. |
| |  |  | | --- | --- | | **a)** | 1/3 sq. unit |  |  |  | | --- | --- | | **b)** | 2/3 sq. unit |  |  |  | | --- | --- | | **c)** | 1 sq. unit |  |  |  | | --- | --- | | **d)** | 7/3 sq. unit | |
| **4:** If , then |
| |  |  | | --- | --- | | **a)** |  |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** |  | |
| **5:** If and f(1) = 2, then area enclosed by is |
| |  |  | | --- | --- | | **a)** | f (4) sq. unit |  |  |  | | --- | --- | | **b)** | (1/2) f(6) sq. unit |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** |  | |
| **6:** Assertion :  Reason : |
| |  |  | | --- | --- | | **a)** | both Assertion and Reason are individually true and Reason is the correct explanation of Assertion |  |  |  | | --- | --- | | **b)** | both Assertion and Reason are individually true but Reason is not the correct explanation of Assertion |  |  |  | | --- | --- | | **c)** | Assertion is true but Reason is false |  |  |  | | --- | --- | | **d)** | Assertion is false but Reason is true | |
| **7:** If a, b, c, d be four consecutive coefficients in the binomial expansion of (1 + x)n, then the value of the expression (where x > 0) is |
| |  |  | | --- | --- | | **a)** | < 0 |  |  |  | | --- | --- | | **b)** | > 0 |  |  |  | | --- | --- | | **c)** | = 0 |  |  |  | | --- | --- | | **d)** | 2 | |
| **8:** If tn denotes the nth term of an AP and and  then which of the following is necessarily a root of the equation    is |
| |  |  | | --- | --- | | **a)** | tp |  |  |  | | --- | --- | | **b)** | tq |  |  |  | | --- | --- | | **c)** | tpq |  |  |  | | --- | --- | | **d)** | tp+q | |
| **9:** The number of solutions of where [x] denotes the greatest integer is |
| |  |  | | --- | --- | | **a)** | infinite |  |  |  | | --- | --- | | **b)** | 4 |  |  |  | | --- | --- | | **c)** | 3 |  |  |  | | --- | --- | | **d)** | 2 | |
| **10:** The value of is |
| |  |  | | --- | --- | | **a)** | 5 |  |  |  | | --- | --- | | **b)** | 4 |  |  |  | | --- | --- | | **c)** | 3 |  |  |  | | --- | --- | | **d)** | 2 | |
| **11:** Assertion : If a + b + c = 0 and a, b, c are rational, then the roots of the equation  are rational. Reason : Discriminant of is a perfect square. |
| |  |  | | --- | --- | | **a)** | Both assertion and reason individually true and reason is the correct explanation of assertion |  |  |  | | --- | --- | | **b)** | Both assertion and reason individually true but reason is not the correct explanation of assertion |  |  |  | | --- | --- | | **c)** | Assertion is true but reason is false |  |  |  | | --- | --- | | **d)** | Assertion is false but reason is true | |
| **12:** The probability that atleast one of the events A and B occur is 0.6. If A and B occur simultaneously with probability 0.2, then where and are complements of A and B respectively, is equal to |
| |  |  | | --- | --- | | **a)** | 0.4 |  |  |  | | --- | --- | | **b)** | 0.8 |  |  |  | | --- | --- | | **c)** | 1.2 |  |  |  | | --- | --- | | **d)** | 1.4 | |
| **13:** If (where then (x, y) is |
| |  |  | | --- | --- | | **a)** | (0, 1) |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** | (2, 3) |  |  |  | | --- | --- | | **d)** | (4, 8) | |
| **14:** The value of the integral , where [.] denotes the greatest integer function is |
| |  |  | | --- | --- | | **a)** | 0 |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** | 10 |  |  |  | | --- | --- | | **d)** | none of these | |
| **15:** Let be a function defined by  is |
| |  |  | | --- | --- | | **a)** | one-one and into |  |  |  | | --- | --- | | **b)** | one-one and onto |  |  |  | | --- | --- | | **c)** | many one and onto |  |  |  | | --- | --- | | **d)** | many one and into | |
| **16:** The number of ways in which we can choose 2 distinct integers from 1 to 100 such that difference between them is at most 10 is |
| |  |  | | --- | --- | | **a)** |  |  |  |  | | --- | --- | | **b)** | 72 |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** | none of these | |
| **17:** A second order determinant is written down at random using the numbers 1, as elements. The probability that the value of the determinant is non zero is |
| |  |  | | --- | --- | | **a)** | 1/2 |  |  |  | | --- | --- | | **b)** | 3/8 |  |  |  | | --- | --- | | **c)** | 5/8 |  |  |  | | --- | --- | | **d)** | 1/3 | |
| **18:** If Cr stands for then the sum of first (n + 1) terms of the series is |
| |  |  | | --- | --- | | **a)** | 0 |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** |  | |
| **19:** The minimum value of the expression , where are real numbers satisfying is |
| |  |  | | --- | --- | | **a)** | +ve |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** | zero |  |  |  | | --- | --- | | **d)** |  | |
| **20:** Assertion : If is purely imaginary then  Reason :  i.e. |
| |  |  | | --- | --- | | **a)** | Both assertion and reason are individually true and reason is the correct explanation of A |  |  |  | | --- | --- | | **b)** | Both assertion and reason are individually true but reason is not the correct explanation of A |  |  |  | | --- | --- | | **c)** | Assertion is true but reason is false |  |  |  | | --- | --- | | **d)** | Assertion is false but reason is true | |
| **21:** PQ is any focal chord of the parabola y2 = 32x. Then length of PQ can never be less than |
| |  |  | | --- | --- | | **a)** | 8 unit |  |  |  | | --- | --- | | **b)** | 16 unit |  |  |  | | --- | --- | | **c)** | 32 unit |  |  |  | | --- | --- | | **d)** | 48 unit | |
| **22:** If , then x is equal to |
| |  |  | | --- | --- | | **a)** | 2 |  |  |  | | --- | --- | | **b)** | 3 |  |  |  | | --- | --- | | **c)** | 10 |  |  |  | | --- | --- | | **d)** | 30 | |
| **23:** A number is chosen at random from the numbers 10 to 99. By seeing the number a man will laugh if product of the digits is 12. If he chosen three numbers with replacement, then the probability that he will laugh atleast one, is |
| |  |  | | --- | --- | | **a)** |  |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** |  | |
| **24:** If one root of the equation is even prime while has equal roots, then is |
| |  |  | | --- | --- | | **a)** | 8 |  |  |  | | --- | --- | | **b)** | 16 |  |  |  | | --- | --- | | **c)** | 24 |  |  |  | | --- | --- | | **d)** | 32 | |
| **25:** The sum of the integers lying between 1 and 100 (both inclusive) and divisible by 3 or 5 or 7 is |
| |  |  | | --- | --- | | **a)** | 818 |  |  |  | | --- | --- | | **b)** | 1828 |  |  |  | | --- | --- | | **c)** | 2838 |  |  |  | | --- | --- | | **d)** | 3848 | |
| **26:** The rank of is equal to |
| |  |  | | --- | --- | | **a)** | 4 |  |  |  | | --- | --- | | **b)** | 3 |  |  |  | | --- | --- | | **c)** | 5 |  |  |  | | --- | --- | | **d)** | 1 | |
| **27:**  is equal to |
| |  |  | | --- | --- | | **a)** |  |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** | none of these | |
| **28:** Let a, b, c be three cube roots of unity, the value of |
| |  |  | | --- | --- | | **a)** | (1 + a)3 |  |  |  | | --- | --- | | **b)** | (1 + b)3 |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** |  | |
| **29:** The value of and are respectively (where ) |
| |  |  | | --- | --- | | **a)** | 1296, 400 |  |  |  | | --- | --- | | **b)** | 72, 16 |  |  |  | | --- | --- | | **c)** | 36, 9 |  |  |  | | --- | --- | | **d)** | 216, 25 | |
| **30:** If then is equal to |
| |  |  | | --- | --- | | **a)** |  |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** | none of these | |
| **31:** If   up to n terms, then is equal to |
| |  |  | | --- | --- | | **a)** |  |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** | none of these | |
| **32:** If the derivative of the function  is everywhere continuous, then |
| |  |  | | --- | --- | | **a)** | a = 2, b = 3 |  |  |  | | --- | --- | | **b)** | a = 3, b = 2 |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** |  | |
| **33:** The graph of the function y = f(x) has a unique tangent at the point (a, 0) through which the graph passes. Then is |
| |  |  | | --- | --- | | **a)** | 0 |  |  |  | | --- | --- | | **b)** | 1 |  |  |  | | --- | --- | | **c)** | 2 |  |  |  | | --- | --- | | **d)** | none of these | |
| **34:** If f(x) is a polynomial function of the seconds degree such that then the graph of the function f(x) cuts the ordinate x = 1 at the point |
| |  |  | | --- | --- | | **a)** | (1, 8) |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** | 1, 4 |  |  |  | | --- | --- | | **d)** | none of these | |
| **35:** Let  , then a and b are given by |
| |  |  | | --- | --- | | **a)** | a = 1/4, b = 1 |  |  |  | | --- | --- | | **b)** | a = 2, b = 2 |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** | a = 2, b = 4 | |
|  |
| Q.No.2      (5 x 1 M) |
| **1:** The equation has (where [x] is the greatest integer less than or equal to x) |
| |  |  | | --- | --- | | **a)** | no solution in |  |  |  | | --- | --- | | **b)** | no solution in |  |  |  | | --- | --- | | **c)** | no solution in |  |  |  | | --- | --- | | **d)** | no solution for | |
| **2:** There are n seats round a table marked The number of ways in which persons can take seats is |
| |  |  | | --- | --- | | **a)** |  |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** |  | |
| **3:** A (1, 2) and B (7, 10) are two points. If P (x, y) is a point such that the angle APB is 60° and the area of the is maximum, then which of given is / are true? |
| |  |  | | --- | --- | | **a)** | P lies on any line perpendicular to AB |  |  |  | | --- | --- | | **b)** | P lies on the right bisector of AB |  |  |  | | --- | --- | | **c)** | P lies on the straight line 3x + 4y = 36 |  |  |  | | --- | --- | | **d)** | P lies on the circle passing through the points (1, 2) and (7, 10) and having a radius of 10 units | |
| **4:** Let , then |
| |  |  | | --- | --- | | **a)** |  |  |  |  | | --- | --- | | **b)** |  |  |  |  | | --- | --- | | **c)** |  |  |  |  | | --- | --- | | **d)** | none of these | |
| **5:** ,, holds for |
| |  |  | | --- | --- | | **a)** | no value of x and |  |  |  | | --- | --- | | **b)** | one value of x and two values of |  |  |  | | --- | --- | | **c)** | two values of x and two values of |  |  |  | | --- | --- | | **d)** | two pairs of values of | |
|  |
| Q.No.3      (5 x 1 M) |
| **1:** If a, b, c are in AP, then are in AP. |
| |  |  | | --- | --- | | **a)** | True |  |  |  | | --- | --- | | **b)** | False | |
| **2:** The least integral value of n such that 7n > 105, given that log10 343 = 2.5353 is 6. |
| |  |  | | --- | --- | | **a)** | True |  |  |  | | --- | --- | | **b)** | False | |
| **3:** The tangent at any point of the curve makes an angle with x-axis. |
| |  |  | | --- | --- | | **a)** | True |  |  |  | | --- | --- | | **b)** | False | |
| **4:** The largest distance of the point from the curve is . |
| |  |  | | --- | --- | | **a)** | True |  |  |  | | --- | --- | | **b)** | False | |
| **5:** Two consecutive sides of a parallelogram are and . If equation to one diagonal is , the equation to the other diagonal is . |
| |  |  | | --- | --- | | **a)** | True |  |  |  | | --- | --- | | **b)** | False | |
|  |
| Q.No.4      (5 x 1 M) |
| **1:** If and B(adj A) and C = 5A, then |
|  |
| **2:** The larger of ln (1 + x) and is \_\_\_\_\_\_\_\_ |
|  |
| **3:** If the sides of a are in AP as well as GP, then the value of is (where are radii of excircles) \_\_\_\_ |
|  |
| **4:** Let and , then \_\_\_\_\_ |
|  |
| **5:** The value of a for which the image of the point w.r.t the line mirror is the point is \_\_\_\_\_ |
|  |