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M.Sc. (CA & IT) Semester-I

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201 : Mathematics-I

કુલ સમય :– : ૬૦ મીનીટ કુલ પ્રશ્નો : ૫૦ વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૩૫

નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

1 If x is a set and the set contains an integer which is neither positive nor negative then the set x is _____.
(a) Set is Empty (b) Set is Non-empty (c) Set is Finite (d) Set is both Non- empty and Finite

2 If $x \in N$ and x is prime, then x is _____ set.
(a) Infinite set (b) Finite set (c) Empty set (d) Not a set

3 If x is a set and the set contains the real number between 1 and 2, then the set is _____.
Empty set (b) Finite set (c) Infinite set (d) None of the mentioned

4 Which of the following is a subset of set {1, 2, 3, 4}?
(a) {1, 2} (b) {1, 2, 3} (c) {1} (d) All of the mentioned

5 Power set of empty or Null set has exactly _____ subset.
(a) One (b) Two Zero (d) Three

6 What is the Cartesian product of set A and set B, if the set A = {1, 2} and set B = {a, b}?
(a) { (1, a), (1, b), (2, a), (b, b) } (b) { (1, 1), (2, 2), (a, a), (b, b) }
(c) { (1, a), (2, a), (1, b), (2, b) } (d) { (1, 1), (a, a), (2, a), (1, b) }

7 The members of the set S = {x | x is the square of an integer and x < 100} is _____.
(a) {0, 2, 4, 5, 9, 55, 46, 49, 99, 81} (b) {1, 4, 9, 16}
(c) {0, 1, 4, 9, 16, 25, 36, 49, 64, 81} (d) {0, 1, 4, 9, 25, 36, 49, 123}

8 The intersection of the sets {1, 2, 8, 9, 10, 5} and {1, 2, 6, 10, 12, 15} is the set _____
(a) {1, 2, 10} (b) {5, 6, 12, 15} (c) {2, 5, 10, 9} (d) {1, 6, 12, 9, 8}

9 The difference of {1, 2, 3, 6, 8} and {1, 2, 5, 6} is the set _____.
(a) {1, 3} (b) {5, 6, 8} (c) {3, 8} (d) {2, 6, 5}

10 If n(A) = 20 and n(B) = 30 and n(A ∪ B) = 40 then n(A ∩ B) is?
(a) 20 (b) 30 (c) 40 (d) 10

11 Which option contains two equal sets?
(a) X = {5, 6} and Y = {6} (b) X = {5, 6, 8, 9} and Y = {6, 8, 5, 9}
(c) X = {5, 6, 9} and Y = {5, 6} X = {5, 6} and Y = {5, 6, 3}

12 The cardinality of the Power set of the set {1, 5, 6} is_____.
(a) 5 (b) 6 (c) 8 (d) 10

13 The Cartesian product of the (Set Y) x (Set X) is equal to the Cartesian product of (Set X) x (Set Y) or Not?
(a) Yes (b) No (c) None of the above (d) I Don't know

14 How many elements in the Power set of set A= {{Φ}, {Φ, {Φ}}}?
(a) 4 elements (b) 2 elements (c) 6 elements (d) 5 elements

15 Which of the following function is not a mathematics function?
(a) many to one (b) one-to-many (c) one to one (d) All of the mentioned

16 Which of the following function is also referred to as an injective function?
(a) Many-to-one (b) Onto (c) One-to-One (d) None of the mentioned

17 The function (gof) is _____ , if the function f and g are onto function?
(a) Into function (b) one to one function (c) onto function (d) one-to-many function

18 The cardinality of the set of even positive integers less than 20 is_____?
(a) 8 (b) 10 (c) 9 (d) 12

19 If X = {2, 8, 12, 15, 16} and Y= {8, 16, 15, 18, 9} then union of X and Y is_____.
(a) {2, 8, 12, 15, 16} (b) { 8, 16, 15} (c) {8, 16, 15, 18, 9} (d) {2, 8, 9, 12, 15, 16, 18}

20 What is Floor function?
(a) It maps the real number to the greatest previous integer
(b) It maps the real number to the smallest previous integer
(c) It maps the real number to the smallest following integer
(d) None of the mentioned

21 What is the value of Floor (8.4) + Ceiling (9.9)?
(a) 18 (b) 19 (c) 20 (d) 17

22 According to the symmetric matrix, which of the following statement is correct?
(a) $A = A^T$ (b) All the diagonal elements of a symmetric matrix are one.
(c) $A = -A^T$ (d) All the diagonal elements of a symmetric matrix are Zero.

23 Which of the following matrix having only one row and multiple columns?
(a) Diagonal Matrix (b) Row Matrix (c) Column Matrix (d) None of the mentioned

24 Which of the following matrix having only one column and multiple rows?
(a) Diagonal Matrix (b) Row Matrix (c) Column Matrix (d) None of the mentioned

25 Which of the following condition is correct if we want to add two matrices?
(a) Both rows and columns of both the matrices which we want to add are the same
(b) Columns of both the matrices which we want to add are equal
(c) Rows of both the matrices which we want to add are the same
(d) a number of the first matrix's rows should be equal to the number of the second matrix's column, which we want to add.

26 A+B = B+A is a true or false statement if the order of A matrix and B matrix is the same.
(a) False (b) True

27 XY = YX is a true or false statement if the order of A matrix and B matrix is the same.
False (b) True

28 A function is said to be _____ if and only if f(a) = f(b) implies that a = b for all a and b in the domain of f.
(a) One-to-many (b) One-to-one (c) Many-to-many (d) Many-to-one

29 Let f and g be the function from the set of integers to itself, defined by f(x) = 2x + 1 and g(x) = 3x + 4. Then the composition of f and g is _____
(a) 6x + 9 (b) 6x + 7 (c) 6x + 6 (d) 6x + 8

30 The inverse of function $f(x) = x^3 + 2$ is _____
(a) $f^{-1}(y) = (y - 2)^{½}$ (b) $f^{-1}(y) = (y - 2)^{1/3}$ (c) $f^{-1}(y) = (y)$ 1/3 (d) $f^{-1}(y) = (y - 2)$

31 The function f : A → B defined by f(x) = 4x + 7, x ∈ R is
(a) one-one (b) Many-one (c) Odd (d) Even

32 If A is a square matrix, then A – A' is a
(a) diagonal matrix (b) skew-symmetric matrix (c) symmetric matrix (d) none of these

33 If A is any square matrix, then which of the following is skew-symmetric?
(a) $A + A^T$ (b) $A - A^T$ (c) AA^T (d) A^TA

34 The matrix $A = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ is a
(a) unit matrix (b) symmetric matrix (c) diagonal matrix (d) skew-symmetric matrix

35 If $\begin{bmatrix} x+y & 2x+z \\ x-y & 2z+w \end{bmatrix} = \begin{bmatrix} 4 & 7 \\ 0 & 10 \end{bmatrix}$, then the values of x, y, z and w respectively are
(a) 2, 2, 3, 4 (b) 2, 3, 1, 2 (c) 3, 3, 0, 1 (d) None of these

36 If $A = \begin{bmatrix} 2 & 1 \\ -1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -2 \\ 2 & 1 \end{bmatrix}$, $C = \begin{bmatrix} 1 & -3 \\ 2 & 1 \end{bmatrix}$, then
(a) A + B = B + A and A + (B + C) = (A + B) + C (b) A + B = B + A and AC = BC
(c) A + B = B + A and AB = BC (d) AC = BC and A = BC

37 $A = \begin{bmatrix} 3 & 4 & 5 \\ 0 & 2 & 3 \\ 0 & 0 & 7 \end{bmatrix}$, then |A| = _____.
(a) 40 (b) 50 (c) 42 (d) 15

38 In how many ways 8 Indians, 4 Americans and 4 Englishmen can be seated in a row so that all persons of the same nationality sit together?
(a) 3! 4! 8! 4! (b) 3! 8! (c) 4! 4! (d) 8! 4! 4!

39 How many permutations of the letters of the word APPLE are there ?
(a) 600 (b) 120 (c) 240 (d) 60

40 In how many ways 4 boys and 3 girls can be seated in a row so that they are alternate.
(a) 144 (b) 288 (c) 12 (d) 256

41 If A and B are sets and AUB = A∩B , then
(a) A = Ø (b) B = Ø (c) A = B (d) none of these

42 The number of elements in the power set of the set {{a, b} , c} is
(a) 8 (b) 4 (c) 3 (d) 7

43 Order of the power set of a set of order n is
(a) 2 (b) 2n (c) n^2 (d) 2^n

44 Let n(A) denotes the number of elements in set A. If n(A) = p and n(B) = q, then how many ordered pairs (a , b) are there with a ∈ A and b ∈ B ?
(a) p^2 (b) p * q (c) p + q (d) 2 p q

45 In the function y = f(x) , the 'f' is classified as
(a) Name of function (b) Value of function (c) Upper limit of function (d) Lower limit of function

46 In the function y = f(x), 'y' is classified as
(a) Dependent variable (b) Lower limit variable (c) Upper limit variable (d) Independent variable

47 The set of all possible input values for a function is classified as
(a) Lower limit (b) Range (c) Domain (d) Upper limit

48 The notation of mapping input values to output values is written as
(a) f : X -> Y (b) f : Y -> X (c) X : Y -> f (d) Y : X -> f

49 In the function y = f(x) , the x is classified as
(a) Upper limit variable (b) Independent variable (c) Dependent variable (d) Lower limit variable

50 The inverse of function $f(x) = x^3 + 2$ is _____
(a) $f^{-1}(y) = (y - 2)^{½}$ (b) $f^{-1}(y) = (y - 2)^{1/3}$ (c) $f^{-1}(y) = (y)^{1/3}$ (d) $f^{-1}(y) = (y - 2)$