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Questions:

Fill in the blanks

1. For any two non-empty sets A and B, A x B is called as _____.
2. If n(A x B) = 20 and n(A) = 5 then n(B) is _____.
3. If A = {-1,1} and B = {-1,1} then geometrically describe the set of points of A x B .
4. If A, B are the line segments given by the intervals (–4, 3) and (–2, 3) respectively, represent the cartesian product of A and B.
5. Relations are subsets of _____; Functions are subsets of _____
6. If f : $\mathbb{N} \to \mathbb{N}$ is defined as f (x) = x^2 the pre image(s) of 1 and 2 are _____ and _____
7. Is f : $A \to B$ is a constant function, then the range of f wiII have _____ elements.
8. Find the value IN 1+2+3+.....+100 find Your Value

Multiple Choice Question

9. If the ordered pairs (a + 2, 4) and (5, 2a + b) are equal then (a, b) is
   (a) (2,-2) (b) (5,1) (c) (2,3) (d) (3,-2)
10. Let f(x) = $\sqrt{1+x^2}$ then
    (a) f(xy) = f(x).f(y) (b) f(xy) ≥ f(x).f(y) (c) f(xy) ≤ f(x).f(y) (d) None of these
11. If f : R⟶R is defined by (x) = x^2 + 2, then the preimage 27 are _____
    (a) 0.5 (b) 5, -5 (c) 5, 0 (d) $\sqrt{5}, -\sqrt{5}$
12. $(x - \frac{1}{x}) = x^2 + \frac{1}{x^2}$ then f(x) =
    (a) x^2 + 2 (b) $x^2 + \frac{1}{x^2}$ (c) x^2- 2 (d) $x^2 - \frac{1}{x^2}$
13. Let f(x) = x^2 - x, then f(x- 1) - (x + 1) is _____
    (a) 4x (b) 2-2x (c) 2-4x (d) 4x-2
14. If the order pairs (a, -1) and (5, b) belongs to {(x, y) | y = 2x + 3}, then a and b are _____
    (a) -13, 2 (b) 2, 13 (c) 2, -13 (d) -2,13
15. If function f : N⟶N, f(x) = 2x then the function is, then the function is
    (a) Not one - one and not onto (b) one-one and onto (c) Not one -one but not onto (d) one - one but not onto
16. If f(x) = mx + n, when m and n are integers f(-2) = 7, and f(3) = 2 then m and n are equal to _____
    (a) -1, -5 (b) 1, -9 (c) -1, 5 (d) 1, 9
17. If f(x) = ax - 2, g(x) = 2x - 1 and fog = gof, the value of a is _____
    (a) 3 (b) -3 (c) $\frac{1}{3}$ (d) 13
18. If $f(x) = \frac{1}{x}$, and $g(x) = \frac{1}{x^3}$ then f o g o(y), is _____
    (a) $\frac{1}{y^3}$ (b) $\frac{1}{y^6}$ (c) $\frac{1}{y^9}$ (d) $\frac{1}{y^7}$
19. If n(A) = p, n(B) = q then the total number of relations that exist between A and B is _____
    (a) pq (b) 2^{pq} (c) q^p (d) p^q
20. If f(x) = 2 - 3x, then f o f(1 - x) = ?
    (a) 5x+9 (b) 9x-5 (c) 5-9x (d) 5x-9
21. If f is constant function of value $\frac{1}{10}$, the value of f(1) + f(2) + ... + f(100) is _____
    (a) $\frac{1}{100}$ (b) 100 (c) $\frac{1}{10}$ (d) 10
22. If $f(x) = \frac{x+1}{x-2}$, $g(x) = \frac{1+2x}{x-1}$ then fog(x) is _____
    (a) Constant function (b) Quadratic function (c) Cubic function (d) Identify function
23. Coefficient of variation is a relative measure of ___
    (a) Mean (b) Range (c) Standard Deviation (d) Coefficient of range
24. The equation of axis of symmetry of a parabola is given by _____
    (a) X = b/2a (b) X = -b/2a (c) X = b/4a (d) X = -b/4a
25. The excluded value of the rational expression x/x^2+1 is _____
    (a) 1 (b) -1 (c) ± 1 (d) No real excluded value
26. All elements of a function should have images a _____
    (a) True (b) False (c) sometimes true (d) sometimes false
27. Composition of function is associative _____
    (a) Always true (b) Never true (c) Sometimes true (d) None of these
28. A function is also called as a _____
    (a) mapping (b) transformation (c) both a and b (d) none of these
29. If A, B, C are any three sets, then $A \times (\dot{B} \cup C)$ is equal to _____
    (a) $(A \times B) \cup (A \times C)$ (b) $(A \cup B) \cup (A \cup C)$ (c) Both (a) and (b) (d) None of these
30. Let A = {a, b, c, d}, B = {b, c, d, e}, then $n\{(A \times B) \cap (B \times A)\} =$ _____
    (a) 3 (b) 6 (c) 9 (d) None of these
31. If A is the set of even numbers less than 8 and B is the set of prime numbers less than 7, then the number of relations from A to B is _____
    (a) 2^9 (b) 9^2 (c) 3^2 (d) 2^{9-1}
32. Let N be the set of all natural numbers and let 'R' be a relation on N defined as $\mathbf{R} = \{(x, y)/x \in N, y \in N \text{ and } \mathbf{x} + 3\mathbf{y} = 15\}$. Then R as set of ordered pairs is _____
    (a) {(3, 4), (5, 3), (9, 2),(13, 2)} (b) {(3, 5), (2, 7),(9, 2),(12, 1)} (c) {(3, 4), (6, 3), (9, 2), (12, 1)} (d) {(4, 5), (7, 3), (4, 5), (4, 2)}

33. If n(A) = p, n(B) = q then the total number of relations that exist between A and B is _____

(a) 2^p (b) 2^q (c) 2^{p+q} (d) 2^{pq}

34. A relation R is defined from {2, 3, 4, 5} to {3, 6, 7, 10} by $xRy \Leftrightarrow$ x is relatively prime to y Then, domain of R is

(a) {2,3,5} (b) {3,5} (c) {2,3,4} (d) {2,3,4,5}

35. Let R be a relation from set A to a set B, then _____

(a) $R = A \cup B$ (b) $A \cap B$ (c) $R \subseteq A \times B$ (d) $R \subseteq B \times A$

36. If $f(x) = 2x^2 + bx + c$ and $f(0) = 3$ and $f(2) = 1$, then f(1) is equal to _____

(a) -2 (b) 0 (c) 1 (d) 3

37. The domain of the function 'f' given by $f(x) = \frac{x^2+2x+1}{x^2-x-6}$ _____

(a) R- {3, -2} (b) R- {-3, 2} (c) R- {3, 2} (d) R - {- 3, - 2}

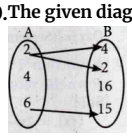
38. Which of the following are functions?

(a) $\{(x, y) : y^2 = x, x, y \in R\}$ (b) $\{(x, y) : y = |x|, x, y \in R\}$ (c) $\{(x, y) : x^2 + y^2 = 1, x, y \in R\}$ (d) $\{(x, y) : x^2 - y^2 = 1, x, y \in R\}$

39. If $x \neq 1$ and $f(x) = \frac{x+1}{x-1}$ is areal function, then f (f(f(2))) is _____

(a) 1 (b) 2 (c) 3 (d) 4

40. The given diagram represents PTA _____



(a) an onto function (b) a constant function (c) an one - one function (d) not a function

41. Let $f\left(x + \frac{1}{x}\right) = x^2 + \frac{1}{x^2}, x \neq 0,$ then $f(x)$ is equal to _____

(a) $x^2 - 2$ (b) $x^2 - 1$ (c) $f\left(-\frac{a}{a+1}\right)$ (d) f(a)

42. Given f(2) = 3, g(3) = 2 and g(2) = 5, then (f o g) (3) =

(a) 2 (b) 3 (c) 4 (d) 5

43. Composition of functions is commutative _____

(a) Always true (b) Never true (c) Sometimes true (d) None of the Above

44. Composition of functions is associative _____

(a) Always true (b) Never true (c) Sometimes true (d) None of the Above

45. Functions are subsets of _____.

(a) Relation (b) Cartesian Product (c) Range (d) Function

46. If f:N-R is defined by $f(n)=2^n$,then the range of the function is

(a) Set of all even positive integers (b) N (c) R (d) A subset of set of all even positive integers

47. An example for a function which is not a relation (Domain-R, Codomain-R) is

(a) y=x (b) y=x-1 (c) $y=x^2$ (d) Not possible

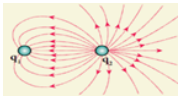
48. If {(7,11),(5,a)} represents a constant function then the value of a is

(a) 7 (b) 11 (c) 5 (d) 9

49. If $f(x) = 2x^3$ and $g(x) = \frac{2}{3x}$, then $f \circ g$ is

(a) $\frac{3}{2x^2}$ (b) $\frac{2}{3x^2}$ (c) $\frac{2}{9x^2}$ (d) $\frac{1}{6x^2}$

50. What is the ratio of the charges $\left|\frac{q_1}{q_2}\right|$ for the following electric field line pattern?



(a) $\frac{1}{5}$ (b) $\frac{25}{11}$ (c) 5 (d) $\frac{11}{25}$

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