ARTHI EDUCATIONAL CENTER

creative one mark unit -1 & 2

10th Standard   Date : 27-Mar-24

Reg.No. : ☐☐☐☐☐☐

Maths

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Time : 01:00:00 Hrs

Total Marks : 99

I. ANSWER ALL QUESTION   99 x 1 = 99

1) 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) $\sqrt{5}, -\sqrt{5}$

2) $\left(x - \frac{1}{x}\right) = x^2 + \frac{1}{x^2}$ then f(x) =

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

3) Let f(x) = x^2 - x, then f(x- 1) - (x + 1) is _____

(a) 4x   (b) 2-2x   **(c) 2-4x**   (d) 4x-2

4) If the order pairs (a, -1) and (5, b) blongs to {(x, y) | y = 2x + 3}, then a and b are _____

(a) -13, 2   (b) 2, 13   (c) 2, -13   **(d) -2,13**

5) 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**

6) If f(x) = x + 1 then f(f(f(y + 2))) is _____

(a) y + 5   (b) y + 6   (c) y + 7   (d) y + 9

7) 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

8) The function t which maps temperature in degree Celsius into temperature in degree Fahrenheit is defined Fahrenheit degree is 95, then the value of C $t(C) = \frac{9c}{5} + 32$ is _____

(a) 37   (b) 39   **(c) 35**   (d) 36

9) 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

10) If $f(x) = \frac{1}{x}$, and $g(x) = \frac{1}{x^3}$ then f o g o(y), is _____

(a) $\frac{1}{y^8}$ (b) $\frac{1}{y^6}$ (c) $\frac{1}{y^4}$ **(d) $\frac{1}{y^3}$**

11) 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

12) If f(x) = 2 - 3x, then f o f(1 - x) = ?

(a) 5x+9   (b) 9x-5   **(c) 5-9x**   (d) 5x-9

13) If f(x) + f(1 - x) = 2 then $f\left(\frac{1}{2}\right)$ is _____

(a) 5   (b) -1   (c) -9   **(d) 1**

14) If f is constant function of value $\frac{1}{10}$, the value of f(1) + f(2) + ... + f(100) is _____

15) 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**

16) If f is identify function, then the value of f(1) - 2f(2) + f(3) is:

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

17) Coefficient of variation is a relative measure of _____

(a) Mean   (b) Range   (c) Standard Deviation   (d) Co.efficient of range

18) 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

19) The excluded value of the rational expression x/x²+1 is _____

(a) 1   (b) -1   (c) ± 1   (d) No real excluded value

20) a cotθθ + b cosecθθ = p and b cot θθ + a cosecθθ = q then $p^2 - q^2$ is equal to _____

(a) $a^2 - b^2$ (b) $b^2 - a^2$ (c) $a^2 + b^2$ (d) b - a

21) All elements of a function should have images a _____

(a) True   (b) False   (c) sometimes true   (d) sometimes false

22) Composition of function is asssociative _____

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

23) A function is also called as a _____

(a) mapping   (b) transformation   **(c) both a and b**   (d) none of these

24) lf 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}

25) If A - {1, 2}, B = {0, 1}, then A x B is _____

(a) {(1,0), (1 ,1), (2, 0), (2, 1)}   (b) {(1, 0), (2, 1)}   (c) {(1, 1), (1, 2), (0, 1), (0, 2)}   (d) None of these

26) If the set A has 'p' elements, B has 'q' elements, then the number of elements in A x B is _____

(a) p + q   (b) p + q + 1   **(c) pq**   (d) p^2

27) 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

28) 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

29) 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) $2^{9\,-1}$

30) 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)}

31) 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}**

32) A relation R is defined from {2, 3, 4, 5} to {3, 6, 7, 10} by $\mathbf{xRy} \Leftrightarrow \mathbf{x}$ 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}**

33) Let R be a relation from set A to a set B, then _____

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

34) 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

35) Let A = {x, y, z} and B = {a, b, c, d}. Which one of the following is not a function and is not a relation from A to B?

(a) {(x, a), (x, c)}   (b) {(y, c), (y, d)}   (c) {(z, a), (z, d)}   **(d) {(z, b), (y, b), (a, d)}**

36) 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}

37) Given f(x) = (- 1)^x is a function from N to Z. Then the range of f is _____

(a) {1}   (b) N   **(c) {1 ,-1}**   (d) Z

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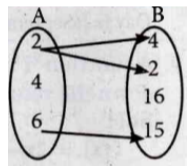
(d) $\{(x,y) : x^2 - y^2 = 1, x, y \in R\}$

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) If $2f(x) - 3f\left(\frac{1}{x}\right) = x^2, (x \neq 0)$ then $f(2) =$?

(a) $\frac{-7}{4}$ (b) $\frac{5}{2}$ (c) -1   (d) None of these

41) The given diagram represents PTA _____

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

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

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

43) If f(x) = x - 2, $g(x) = \sqrt{x^2 + 1}$, then $(g \circ f)(x) =$?

(a) $\sqrt{x^2+1} - 2$ **(b)** $\sqrt{x^2+4x+5}$ (c) $x^2 - 1$ (d) $x^2 - 4x + 5$

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

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

45) Given f = {(- 2, 1), (0, 3), (4, 5)}, g = {(1, 1),(3, 3), (4, 5)} then, Domain and range of g o f _____

(a) D = {3, 0}, R = {-2, 1}   (b) D = {3, -2}, R = {1, 5}   **(c) D = {-2, 0}, R = {1, 3}**   (d) D = {-2 ,1}, R = {0, 3}

46) Composition of functions is commutative _____

(a) Always true   (b) Never true   **(c) Sometimes true**

47) Composition of functions is associative _____

(a) Always true   (b) Never true   (c) Sometimes true

48) Functions are subsets of _____.

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

49) Three numbers a, b and c will be in A.P. if and only if _____

(a) 2a = b + c   (b) 2b = a + c   (c) 2c = a + b   (d) none of these

50) The Average of first 100 natural numbers is _____

(a) 5055   (b) 5050   (c) 5550   (d) 5150

51) -74 = _____ (mod 7)

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

52) If t_n is the nth term of A.P, then $t_{2n} - t_n$ is _____.

(a) 2nd   (b) nd   (c) a+nd   (d) 2a+2nd

53) A sequence is a function defined on the set of _____

(a) real numbers   (b) natural numbers   (c) whole numbers   (d) integers

54) The general term of $1/2, 2/3, 3/4, \ldots$ is _____

(a) $\frac{n}{n-1}$ (b) $\frac{n}{n+1}$ (c) $\frac{n}{2n+1}$ (d) $\frac{n}{2n-1}$

55) Three Numbers a, b and c will be in A.P. If and only if _____

(a) 2b = ac   **(b) 2b = a + c**   (c) b = (a - c) / 2   (d) b^2 = ac

56) What is the HCF of the least prime and the least composite number?

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

57) If a and b are the two positive intergs when a > b and b is a factor of a then HCF (a, b) is _____

(a) b   (b) a   (c) ab   (d) $\frac{a}{b}$

58) If m and n are the two positive integers then m^2 and n^2 are _____

(a) Co-prime   (b) Not co-prime   (c) Even   (d) odd

59) If 3 is the least prime factor of number and 7 is least prime factor of b, then the least prime factor a + b is _____

(a) a + b   (b) 2   (c) 5   (d) 10

60) The difference between the remainders when 6002 and 601 are divided by 6 is _____

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

61) $44 \equiv 8 \pmod{12}$, $113 \equiv 85 \pmod{12}$, thus $44 \times 113 \equiv$_____(mod 12):

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

62) Given a_1 = -1, $a = \frac{a_n}{n+2}$, then a_4 is _____

(a) $-\frac{1}{20}$ (b) $-\frac{1}{4}$ (c) $-\frac{1}{840}$ **(d)** $-\frac{1}{120}$

63) The first term of an A.P. whose 8th and 12th terms are 39 and 59 respectively is _____

(a) 5   (b) 6   **(c) 4**   (d) 3

64) In the arithemetic series Sn = k + 2k + 3k +...+ 100, k is positive integer and k is a factor 100 then S_n is _____

(a) $1000\frac{10}{k}$ (b) $5000\frac{50}{k}$ (c) $\frac{1000}{k} + 10$ **(d)** $\frac{5000}{k} + 50$

65) How many terms are there in the G.P : 5, 20, 80, 320,..., 20480

(a) 5   (b) 6   **(c) 7**   (d) 9

66) If p^{th}, q^{th} and r^{th} terms of an A.P. are a, bc respestively, then (a(q - r) + b(r - p) + c(p - q) is_____

(a) 0   (b) a + b + c   (c) p + q + r   (d) pqr

67) Sum of infinite terms of G.P is 12 and the first term is 8. What is the fourth term of the G.P?

(a) $\frac{8}{27}$ (b) $\frac{4}{27}$ (c) $\frac{8}{20}$ (d) $\frac{1}{3}$

68) A square is drawn by joinintg the mid points of the sides of a given square in the same way and this process continues indefinitely. If the side of the first square is 4 cm, then the sum of the area of all the squares is _____

(a) 8 cm^2   (b) 16 cm^2 (c) 32 cm^2 (d) 64 cm^2

69) A boy saves Rs. 1 on the first day Rs. 2 on the second day, Rs. 4 on the third day and so on. How much did the boy will save upto 20 days?

(a) 2^{19} + 1   (b) 2^{19} - 1   (c) 2^{20} - 1   (d) 2^{21} - 1

70) The sum of first n terms of the series a, 3a, 5a...is _____

(a) na   (b) (2n - 1)a   **(c) $n^2 - a$**   (d) $n^2 a$

71) If p, q, r, x, y, z are in A.P, then 5p + 3, 5r + 3, 5x + 3, 5y + 3, 5z + 3 form _____

(a) a G.P   **(b) an A.P**   (c) a constant sequence   (d) neither an A.P nor a G.P

72) In an A.P if the pth term is q and the qth term is p, then its nth term is _____

(a) p+q-n   (b) p+q+n   (c) p-q+n   (d) p-q-n

73) Sum of first n terms of the series $\sqrt{2} + \sqrt{8} + \sqrt{18} + \ldots$ is _____

(a) $\frac{n(n+1)}{2}$ (b) $\sqrt{n}$ (c) $\frac{n(n+1)}{\sqrt{2}}$ (d) 1

74) HCF of two equal positive integers k, k is _____

(a) k   (b) 1   (c) 0   (d) none of the above

75) Euclid's division lemma cail be used to find the _____ of any two positive integers

(a) HCF   (b) Multiples   (c) Both   (d) None of these

76) Euclid's division lemma is not applicable for which values of b?

(a) Positive integer   **(b) Zero**   (c) Negative integer   (d) All of these

77) Using Euclid's division lemma HCF of 455 and 42 canbe expressed as_____

(a) 455 = 42 x 9 + 77   (b) 455 = 42 x 10 + 35   **(c) 455 = 42 x 11 - 7**   (d) 455 = 42 x 12 - 49

78) The number 132 is to be written as product of its prime factors. Which of the following is correct?

(a) 132 = 2 x 6 x 11   **(b) 132 = 2^2 x 3 x 11**   (c) 132 = 2^2 x 3^2 x 5   (d) 132 = 3 x 4 x 11

79) What is the sum of the prime factors to 240?

(a) 16   (b) 14   (c) 12   (d) 10

80) 25 + 37 $\equiv$ _____ (mod 12)

(a) 2   (b) 3   (c) 1   (d) 62

81) What does 144 reduces to mod 11?

(a) 144   **(b) 1**   (c) 2   (d) 143

82) First term and common difference in the sequence 7, 10, 13,....

(a) 1, 7   (b) 7, 10   **(c) 7, 3**   (d) 13, 10

83) If the first term of an A.P. is a and n^{th} term is b, then the common difference is_____

(a) $\frac{b-a}{n+1}$ **(b)** $\frac{b-a}{n-1}$ (c) $\frac{b-a}{n}$ (d) $\frac{b+a}{n-1}$

84) The common differences of the A.P. $\frac{1}{3}, \frac{1-3b}{3}, \frac{1-6b}{3}, \ldots$ is

(a) $\frac{1}{3}$ (b) $\frac{-1}{3}$ **(c) - b**   (d) b

85) If a, b, c are in A.P then $\frac{a-b}{b-c}$ is equal to _____

(a) $\frac{a}{b}$ (b) $\frac{b}{c}$ (c) $\frac{a}{c}$ **(d) 1**

86) The sum of n terms of an A.P. is $3n^2 + 5n$, then which of its term is 164?

(a) 26th **(b) 27th**   (c) 28th (d) None of these

87) The first, second and last term of an A.P. are a, b and 2a respectively, its sum is _____

(a) $\frac{ab}{2(b-a)}$ (b) $\frac{ab}{b-a}$ **(c)** $\frac{3ab}{2(b-a)}$ (d) None of these

88) 7th term of a G.P. 2, 6, 18 . . is _____

(a) 5832   (b) 2919   **(c) 1458**   (d) 729

89) No term of a geometric sequence be _____

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

90) The sequence -3, -3, -3 ....**kindly send me your key Answers to our email id - padasalai.net@gmail.com**

91) Sum of n terms of a G.P. is _____

(a) $\frac{n}{2}[2a + (n-1)d]$ **(b)** $\frac{a(1-r^n)}{1-r}$ (c) $\frac{2ab}{(a+b)}$ (d) $\frac{a+b}{2}$

92) Sum of 7 terms of -2, 6, -18, . . . is _____

(a) 1094   **(b) - 1094**   (c) 9041   (d) -9041

93) $\frac{5+9+13+\ldots \text{ton terms}}{7+9+11+\ldots \text{to } (n+1) \text{ terms}} = \frac{17}{16}$ then n = ?

(a) 8   **(b) 7**   (c) 10   (d) 11

94) The sum of first n odd natural number is _____

(a) 2n -1   (b) 2n + 1   **(c) n^2**   (d) n^2 - 1

95) lf 1 + 2+ 3 + . . . + 10 = 55, then, $1^3 + 2^3 + 3^3 + \ldots 10^3$ = ?

(a) 55^2   (b) 10^2 (c) 55^3 (d) 10^3

96) $1^2 + 2^2 + 3^2 \ldots + n^2$ = ?

(a) $\left[\frac{n(n+1)}{2}\right]^2$ (b) $\frac{n(n+1)}{2}$ (c) n^2 **(d)** $\frac{n(n+1)(2n+1)}{6}$

97) If 2 + 4 + 6 + ... 2k = 90, then the value of k is _____

(a) 8   **(b) 9**   (c) 10   (d) 11

98) Statement I - A sequence can be considered as a function defined on the set of natural numbers.

Statement II - Though all the sequences are functions, not all the functions are sequences.

(a) Statement I is true and Statement II is false   (b) Statement I is false and Statement II is true

(c) Both the statements are true   (d) Both the statements are false.

99) The Value of r_1 such that 1 + r + r^2 + r^3 +_____ = 3/4

(a) 1/3   (b) -1/3   (c) 3   **(d) -3**