Padasalai's
Telegram Groups!

(தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்!)

- **Padasalai's NEWS - Group**
https://t.me/joinchat/NIfCqVRBNj9hhV4wu6_NqA

- **Padasalai's Channel - Group**
https://t.me/padasalaichannel

- **Lesson Plan - Group**
https://t.me/joinchat/NIfCqVWwo5iL-21gpzrXLw

- 12th Standard - Group
https://t.me/Padasalai_12th

- 11th Standard - Group
https://t.me/Padasalai_11th

- 10th Standard - Group
https://t.me/Padasalai_10th

- 9th Standard - Group
https://t.me/Padasalai_9th

- 6th to 8th Standard - Group
https://t.me/Padasalai_6to8

- 1st to 5th Standard - Group
https://t.me/Padasalai_1to5

- TET - Group
https://t.me/Padasalai_TET

- PGTRB - Group
https://t.me/Padasalai_PGTRB

- TNPSC - Group
https://t.me/Padasalai_TNPSC

CLASS   : X   **REVISION TEST (Unit-1,2)**   MARKS : 100
SUBJECT : MATHEMATICS   TIME : 3hrs
===

PART – A   **14X1=14**

Answer All The Questions :

1. If $n(A \times B) = 20$ and $n(A) = 5$ then $n(B)$ is
   a) 10   b) 2   c) 3   d) 4

2. If A and B are finite sets such that $n(A) = p, n(B) = q$ then the total number of functions that exist between A and B is
   a) p^q b) q^p c) p d) q

3. Let $A = \{1,2,3,4\}$ and $B = \{4,8,9,10\}$. A function $f: A \to B$ given by
   $f: \{(1,4), (2,8), (3,9), (4,10)\}$ is a
   a) Many-one function   b) Identity function
   c) One-to-one function   d) Into function

4. A function represented in a graph is one–one, as the horizontal lines meet the curves in
   a) one point   b) two points   c) three points   d) None of these.

5. Let f and g be two functions given by $f = \{(0,1), (2,0), (3,-4), (4,2), (5,7)\}$ and
   $g = \{(0,2), (1,0), (2,4), (-4,2), (7,0)\}$ then the range of $f \circ g$ is
   a) $\{0,2,3,4,5\}$ b) $\{-4,1,0,2,7\}$ c) $\{1,2,3,4,5\}$ d) $\{0,1,2\}$

6. Let $f(x) = \sqrt{1 + x^2}$ then
   a) $f(xy) = f(x) \cdot f(y)$ b) $f(xy) \geq f(x) \cdot f(y)$
   c) $f(xy) \leq f(x) \cdot f(y)$ d) None of these

7. $f(x) = (x + 1)^3 - (x - 1)^3$ represents a function which is
   a) Linear   b) Cubic   c) Reciprocal   d) Quadratic

8. The HCF of two equal positive integers k, k is
   a) 0   b) 1   c) k d) k^2

9. $7^{4k} \equiv -(mod\ 100)$
   a) 1   b) 2   c) 3   d) 4

10. A sequence is a function defined on the set of
    a) Natural numbers   b) Whole numbers   c) Real numbers   d) Integers.

11. If 6 times of 6th term of an A.P. is equal to 7 times the 7th term, then the 13th term of the A.P. is
    a) 0   b) 6   c) 7   d) 13

12. In an A.P., the first term is 1 and the common difference is 4. How many terms of the A.P. must be taken for their sum to be equal to 120?
    a) 6   b) 7   c) 8   d) 9

13. The average of first 100 natural numbers is
    a) 50   b) 51   c) 50.5   d) 51.5

14. The value of $(1^3 + 2^3 + 3^3 + \cdots + 15^3) - (1 + 2 + 3 + \cdots + 15)$ is
    a) 14400   b) 14200   c) 14280   d) 14520

PART – B   **13x2=26**

Answer 13 Questions : (Q.No 30 is compulsory).

15. Define i) Reciprocal Function ii) Constant Function.

16. Let $X = \{1,2,3,4\}$ and $Y = \{2,4,6,8,10\}$ and $R = \{(1,2),(2,4),(3,6),(4,8)\}$. Show that R is a function and find its domain, co-domain and range?.

17. If $B \times A = \{(-2,3),(-2,4),(0,3),(0,4),(3,3),(3,4)\}$ find A and B.

18. If $f(x) = 2x - x^2$, check whether $f(x+1) = f(x) + f(1)$.

19. If $A = \{-2,-1,0,1,2\}$ and $f: A \to B$ is an onto function defined by $f(x) = x^2 + x + 1$ then find B.

20. If $f(x) = x^2 - 1, g(x) = x - 2$, find 'a', if $g \circ f(a) = 1$.

21. Find k if $f \circ f(k) = 5$ where $f(k) = 2k - 1$.

22. If the Highest Common Factor of 210 and 55 is expressible in the form $55x - 325$, find x.

23. A man starts his journey from Chennai to Delhi by train. He starts at 22.30 hours on Wednesday. If it takes 32 hours of travelling time and assuming that the train is not late, when will he reach Delhi?

24. If $3 + k, 18 - k, 5k + 1$ are in A.P. then find k.

25. In an A.P. the sum of first n terms is $\frac{5n^2}{2} + \frac{3n}{3}$. Find the 17th term.

26. The houses of a street are numbered from 1 to 49. Senthil's house is numbered such that the sum of numbers of the houses prior to Senthil's house is equal to the sum of numbers of the houses following Senthil's house. Find Senthil's house number?

27. Find the sum $\left[\frac{a-b}{a+b} + \frac{3a-2b}{a+b} + \frac{5a-3b}{a+b} + \cdots to\ 12\ terms\right]$.

28. In a G.P. $729, 243, 81, \ldots$ find t_7.

29. Find the sum of $51 + 52 + 53 + \cdots + 92$.

30. A man saved Rs.16500 in ten years. In each year after the first he saved Rs.100 more than he did in the preceding year. How much did he save in the first year?

PART – C   12x5=60

Answer Any 12 Questions : (Q.No 45 is compulsory).

31. Let $A = \{x \in N/1 < x < 4\}, B = \{x \in W / 0 \le x < 2\}$ and $C = \{x \in N/x < 3\}$. Verify that $A \times (B \cup C) = (A \times B) \cup (A \times C)$.

32. Forensic scientists can determine the height (in cms) of a person based on the length of their thigh bone. They usually do so using the function $h(b) = 2.47b + 54.10$ where b is the length of the thigh bone.

   (i)   Check if the function h is one – one

   (ii)   Also find the height of a person if the length of his thigh bone is 50 cms.

   (iii)   Find the length of the thigh bone if the height of a person is 147.96 cms.

33. Let $f: A \to B$ be a function defined by $f(x) = \frac{x}{2} - 1$, where $A = \{2,4,6,8,10\}$,

   $B = \{0,1,2,4,5,9\}$. Represent f by

   i)   Set of ordered pairs   iii)   A Table

   ii)   Arrow diagram   iv)   A Graph

34. If the function $f: R \to R$ is defined by $f(x) = \begin{cases} 2x + 7, & x < -2 \\ x^2 - 2, & -2 \le x < 3 \\ 3x - 2, & x \ge 3 \end{cases}$

   i) $f(4)$ ii) $f(-2)$ iii) $f(4) + 2f(1)$ iv) $\frac{f(1) - 3f(4)}{f(-3)}$.

35. If the function $f: [-5, 9] \to R$ is defined by $f(x) = \begin{cases} 6x + 1, & -5 \le x < 2 \\ 5x^2 - 1, & 2 \le x < 6 \\ 3x - 4, & 6 \le x \le 9 \end{cases}$,

   i) $f(-3) + f(2)$ ii) $f(7) - f(1)$ iii) $2f(4) + f(8)$ iv) $\frac{2f(-2) - f(6)}{f(4) + f(-2)}$.

36. If $f(x) = 2x + 3$, $g(x) = 1 - 2x$, $and\ h(x) = 3x$.
    Prove that $f \circ (g \circ h) = (f \circ g) \circ h$.

37. The functions f and g are defined by $f(x) = 6x + 8$; $g(x) = \frac{x-2}{3}$

  (i)   Calculate the value of $gg\left(\frac{1}{2}\right)$.

  (ii)   Write an expression for $gf(x)$ in its simplest form.

38. Find the first five terms of the following sequence.
$$a_1 = 1, a_2 = 1, a_n = \frac{a_{n-1}}{a_{n-2} + 3} ;\ n \ge 3, n \in N.$$

39. In an A.P., sum of four consecutive terms is 28 and their sum of their squares is 276. Find the four numbers.

40. A mother divides Rs.207 into three parts such that the amount are in A.P. and gives it to her three children. The product of the two least amounts that the children had Rs.4623. Find the amount received by each child.

41. The 13th term of an A.P. is 3 and the sum of first 13 terms is 234. Find the common difference and the sum of first 21 terms.

42. Find the sum of all natural numbers between 300 and 600 which are divisible by 7.

43. The present value of a machine is Rs.40,000 and its value depreciates each year by 10%. Find the estimated value of the machine in the 6th year.

44. Find the sum to n terms of the series $5 + 55 + 555 + \cdots$

45. The sum of the squares of the first n natural numbers is 275, while the sum of their cubes is 625. Find the value of n.

ALL THE BEST

Prepared by :

K.MOHAN., M.Sc.,B.Ed.,M.Phill.,
P.G Assistant in Mathematics,
Sri Ramakrishna Garden M.Hr.Sec.School,
Paradarami .Vellore.

SRI RAMAKRISHNA GARDEN M.HR.SEC.SCHOOL
PARADARAMI.