

Shivraj PABSON

First Terminal Examination 2081

Time: 3hrs

F:M=75

Class:- 9

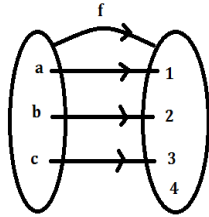
Sub:- O.P.T - Maths

P:M=

Attempts all the questions:

Group A [5x2=10]

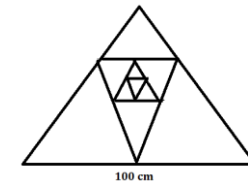
1. a) Define ordered pair with an example .
b) If $(x+2,4)=(6,4)$ what is the value of x ?
- 2.a) If $A \times B = \{(a,1), (a,2), (b,1), (b,2)\}$ list out the element of set A.
b) Define function .
- 3.a) From the given figure , find the co-domain of the function f .



- b) Find the figure degree of the polynomial $9x^5 - 4x^3 + 3x^2 - 7x + 15$
- 4.a) Define sequence with an example .
b) Find the next term of the sequence $x, -x^2, x^3, -x^4, \dots$
- 5.a) Find the limit of the sequence $0.2, 0.02, 0.002, 0.0002, \dots$
b) Find the 8th term of the sequence $1.9, 1.99, 1.999, \dots$
- Group B (4x4=16)
- 6.a) for what values of p and q , $(2p-7, 4q-8)$ and $(p+8, 2q+4)$ are equal to each other.
b) If $A = \{1, 2, 3\}$ and $B = \{a, b, c\}$ find $A \times B$.
- 7.a) If the function $f(x) = 8x-9$ and domain $D = \{4, 5\}$, Find its range .
b) If $f(x) = 2x^3 - 7$ find the value of $f(-2)$.
- 8.a) If $p(x) = (a-2)x^2 + (b+1)x + (c+2)$, $q(x) = 5x^2 + 6x + 8$ and $p(x) = q(x)$ Find the values of a and b .
b) If $p(x) = 3x^3 + 2x^2 - 5$ and $q(x) = 2x^3 - 3x^2 + 7x + 7$, find the sum of $p(x)$ and $q(x)$.
- 9.a) If $f(x) = 2x^3 - 4x + 5$ and $g(x) = 2x^2 - 2x + 3$ Find the product of $f(x)$ and $g(x)$.
b) Find the 15 term of the sequence $3, 6, 9, 12, \dots$

Group c $11 \times 3 = 33$

10. If $A = \{p, q\}$ and $B = \{2, 4, 6\}$ find $A \times B$ and $B \times A$ by mapping diagram.
11. If $P = \{x: 6 \leq x \leq 8\}$ and $Q = \{x: 2 < x \leq 4\}$ Find $P \cap Q$.
12. Write the difference between relation and function.
13. If $f(x) = 2x^2 - 4x + 5$ find the value of $f(7) + f(9)$.
14. If $f(x) = 2x-5$ show that $\frac{f(x+h)-f(x)}{h} = 2$
15. if $P(x) = 11x^2 - 5x + 7$, $q(x) = 13x^2 + 5x - 9$ and $r(x) = 3x^2 - 6x + 1$ then find $p(x) + q(x) - r(x)$.
16. Find the quotient and remainder of the following condition $p(x) \div q(x)$ where $p(x) = 8x^3 + 2x^2 - 6x + 5$ and $q(x) = x - 2$
17. A sequence of number is given as $6, 11, 18, 38, \dots$ find ,
i) n th term
ii) next two terms
iii) value of 11th terms
18. Find the sum of $\sum_{n=2}^9 (2n^2 - n + 5)$
19. if the function $f(x) = \frac{x^2-4}{x-2}$
i) Find the values of $f(x)$ at $x=1.9, 1.09, 1.009$
ii) Find the values of $f(x)$ at $x=2.01, 2.0011$
iii) What is the limit value of the function $f(x)$.
20. Each side of an equilateral triangle is 100cm . A second equilateral triangle is inscribed by joining the mid -points of the sides successively. This process is continued infinitely many times.



- a) Find the length of 3rd sides .
- b) What is the limit of area of triangle ?

- c) What is the limit of perimeter of triangle ?

Group D $4 \times 4 = 16$

21. If $f(x) = 2x+3$; $R = \{5, 7, 9\}$ Find its domain and represent the function in
a) Tabular form b) Mapping diagram
22. If $f(x+2) = f(x) + f(2)$ then prove that : $f(0) = 0$ and $f(-2) = -f(2)$
23. if $f(x) = ax+b$, $f(-3) = -4$ and $f(3) = 2$, find the values of a and b .
24. If $f(x) = \frac{2}{5} - \frac{1}{2}x + \frac{8}{9}x^2 - \frac{4}{5}x^3$, $g(x) = \frac{1}{3}x^3 - \frac{1}{3}x^2 + \frac{3}{4}x - \frac{8}{5}$ and $h(x) = \frac{5}{9}x^2 + \frac{1}{4}x - \frac{6}{5} - \frac{7}{15}x^3$ then prove that $f(x) + g(x) - h(x)$ is zero polynomial .

The End