



PART - I

I Answer the following questions.

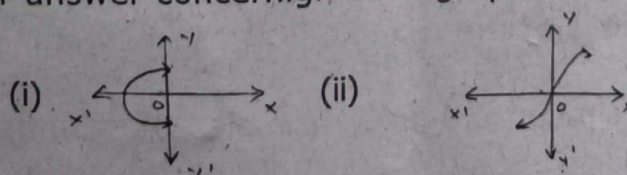
8 X 1 = 8

- If $n(A \times B) = 6$ and $A = \{1, 3\}$ then $n(B)$ is
a) 1 b) 2 c) 3 d) 6
- The Range of the relation $R = \{(x, x^2) / x \text{ is prime number less than } 13\}$ is
a) $\{2, 3, 5, 7\}$ b) $\{2, 3, 5, 7, 11\}$
c) $\{4, 9, 25, 49, 121\}$ d) $\{1, 4, 9, 25, 49, 121\}$
- Let $A = \{1, 2, 3, 4\}$ and $B = \{4, 8, 9, 10\}$ A function $f : A \rightarrow B$ 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) Info function
- The sum of the exponents of the prime factors in the prime factorization of 1729 is
a) 1 b) 2 c) 3 d) 4
- Given $F_1 = 1$, $F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$ then F_5 is
a) 3 b) 5 c) 8 d) 11
- The value of $(1^3 + 2^3 + 3^3 + \dots + 15^3) - (1 + 2 + 3 + \dots + 15)$ is
a) 14400 b) 14200 c) 14280 d) 14520
- A system of three linear equations in three variable is inconsistent if their planes
a) Interesect only at a point b) Intersect in al line
c) Coincides with each other d) do not intersect
- If $n(A) = P$, $n(B) = q$ then total number of relation that exist from A to B is
a) 2^P b) 2^P c) 2^{Pq} d) pq^2

PART - II

II Answer any 6 questions. Questions no. 16 is compulsory. 6 x 2 = 12

- A relation R is given by the set $\{(x, y) / y = x + 3, x, y \text{ are natural numbers } < 10\}$ to Draw an arrow diagram)
- Determine the whether the graph given below represent function. Given reason for your answer concernign each graph.



- Find K if fo $f(k) = 5$ where $f(x) = 2k-1$.

12. Today is Tuesday my uncle come after 45 days. In which day my uncle will be coming?
13. Find the indicated terms of the sequences where n^{th} terms are given by $a_n = \frac{5n}{n+2}$
 a_5 and a_{13} .
14. Solve : $2x - 3y = 6, x + y = 1$.
15. Find the LCM of $4x^2y, 8x^3y^2$.
16. Sum of infinite terms of a G.P. is 12 and first term is 8 find the 4th term of a G.P.

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PART - III

Answer any 5 questions. Question No. 24 is compulsory. 5 x 5 = 25

17. Let $A = \{x \in \mathbb{N} / 1 < x < 4\}$, $B = \{x \in \mathbb{W} / 0 \leq x < 2\}$ and $C = \{x \in \mathbb{N} / x < 3\}$ then verify that $A \times (B \cup C) = (A \times B) \cup (A \times C)$.
18. If the function f is defined by $f(x) = \begin{cases} x+2 & , & x > 1 \\ 2 & , & 1 \leq x \leq 1 \\ x-1 & , & -3 < x < -1 \end{cases}$
- (i) $f(3)$ (ii) $f(0)$ (iii) $f(2) + f(2)$.
19. If $f(x) = x - 4$, $g(x) = x^2$, and $h(x) = 3x - 5$ prove that $f \circ (g \circ h) = (f \circ g) \circ h$.
20. Find the sum of all natural number between 300 and 600 which are divisible by 7.
21. Rekha has 15 square colour papers of size 10cm, 11cm, 12cm, 24cm. How much area can be decorated with these colour papers.
22. Find the GCD of the given polynomials $x^4 + 3x^3 - x - 3$ and $x^3 + x^2 - 5x + 3$.
23. Vani for father and her grand father have an average age of 53, one half of the grand fathers age plus one third of her father age plus one father of Vani age is 65. Four years ago if Vani grandfather her was four times as old as Vani then how old are they all now?
24. If 9^{th} term of A.P. is 0. Prove that its 29^{th} term is twice of the 19th terms.

PART - IV

Answer all questions.

1 x 5 = 5

25. Construct a triangle similar to a given triangle. PQR with its sides equal to $\frac{3}{5}$ of the corresponding sides of the triangle PQR (Scale factor $\frac{3}{5} < 1$). **(OR)**
 Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{7}{3}$ of the corresponding sides of the triangle PQR (Scale factor $\frac{7}{3} > 1$).