Reg.No. :

I.Answer all the questions.

II.Use Blue pen only.
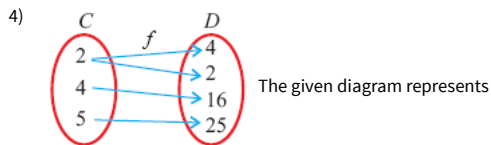
III.Question No 14 is compulsory

Time : 01:30:00 Hrs

Total Marks : 45

Section-A

4 x 1 = 4

1) 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

2) If f = { (6, 3), (8, 9), (5, 3), (−1, 6) }, then the pre-images of 3 are

(a) 5 and −1   (b) 6 and 8   (c) 8 and −1   (d) 6 and 5.

3) Let A = { 1, 3, 4, 7, 11 }, B ={−1, 1, 2, 5, 7, 9 } and f : A → B be given by f = { (1, −1), (3, 2), (4, 1), (7, 5), (11, 9) }. Then f is

(a) one-one   (b) onto   (c) bijective   (d) not a function

4)

The given diagram represents

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

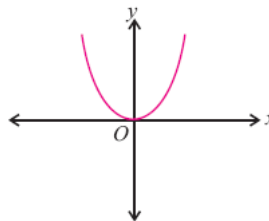## Section-B

5 x 2 = 10

5) If R = {(a,- 2), (- 5, b), (8, c), (d,- 1)} represents the identity function, find the values of a, b, c and d.

6) A = { −2, −1, 1, 2 } and $f = \left\{ \left(x, \frac{1}{x}\right) : x \in a \right\}$. Write down the range of f. Is f a function from A to A ?

7) Write the pre-images of 2 and 3 in the function f = { (12, 2), (13, 3), (15, 3), (14, 2), (17, 17) }.

8) The following table represents a function from A= { 5, 6, 8, 10 } to

B = { 19, 15, 9, 11 } where f(x) = 2x - 1. Find the values of a and b.

x	5	6	8	10
f(x)	a	11	b	19

9)

(i)

State whether the following graphs represent a function. Give reason for your answer.

Section-C

6 x 5 = 30

10) Let A = { 6, 9, 15, 18, 21 }; B = { 1, 2, 4, 5, 6 } and f : A → B be defined by $f(x) = \frac{x-3}{3}$. Represent f by (i) an arrow diagram (ii) a set of ordered pairs (iii) a table (iv) a graph.

11) Let A = {4, 6, 8, 10 } and B = { 3, 4, 5, 6, 7 }. If f : A → B is defined by $f(x) = \frac{1}{2}x + 1$ then represent f by (i) an arrow diagram (ii) a set of ordered pairs and (iii) a table.

12) Let A = {-5,-3,-2,-1}, B = {-2,-1,0} and C = {-6,-4,-2} Find $A \setminus (B \setminus C)$ and $(A \setminus B) \setminus C$. What can we conclude about set difference operation?

13) For A = { x \ x is a prime factor of 42} B = { x | 5 < x ≤ 12, x ∈ N } and C = {1,4,5,6}, verify $A \cup (B \cup C) = (A \cup B) \cup C$

14) a)   Given P = {a,b,c,d,e} , Q = {a,e,i,o,u} and R = {a,c,e,g}. Verify the associative property of set intersection.

(OR)

b)   A = {5,10,15,20}, B = {6,10,12,18,24} and C = {7,10,12,14,21,28} verify whether $A \setminus (B \setminus C)$ = $(A \setminus B) \setminus C$. Justify your answer

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