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Exercise - 10 - (D)

1) i) {3, 5, 7.....} - infinite

ii) {1, 2, 3, 4 } - finite

iii) {..., -3, -2, -1, 0, 12} - infinite

iv) {20, 30, 40, 50, ..., 200} - finite

2) i) Set of counting numbers between 5 and 6 - empty set.

ii) Set of odd numbers between 7 and 9 not empty set.

iii) Set of odd numbers between 7 and 9 empty set

iv) set of even numbers that are not divisible by 2 - empty set.

v) {0} not empty set

3) i) {3, 5, 7} and {5, 3, 7} - equal sets

ii) {8, 6, 10, 12} and {3, 2, 4, 6} - equivalent sets

iii) {7, 7, 2, 1, 2} and {1, 2, 7} - equal sets

iv) {2, 4, 6, 8, 10} and {a, b, d, e, m} - equivalent sets

4) i) Set of integers – infinite

ii) {Mutiples of 5} – infinite

iii) {Fractions between 1 and 2} infinite

iv) {Number of people in India} finite

v) Set of trees in the world – inpinite

vi) Set of leaves on a tree – finite

vii) Set of children in all the schools of Delhi – finite

viii) {..., −4, −2, 0, 2, 4, 6, 8} – infinite

ix) {−12, −9, −6, −3, 0, 3, 6, ...} – infinite

x) {Number of points in a line segment} – infinite 4cm long

5) i) {prime numbers divisible by 2} – not empty set

ii) {Negative natural numbers} – empty set

iii) {woman with height 5 metre} – empty

iv) {Integres less than 5} – not empty

v) Prime numbers between 1 and 3 – not empty

vi) Set of even numbers not divisible by 2 – empty

vii) Set of multiples of 3 that are more than 9 and less than 15 – not empty.

6. i) {Natural numbers less than five} and {Letters of the word 'BOAT'-equivalent sets}

ii) {2, 4, 6, 8, 10} and {even natural numbers less than 12}. equal sets

iii) {1, 3, 5, 7, ...} and set of odd natural numbers. equal sets

iv) {Letters of the word MEMBER} and {Letters of the word 'REMEMBER'} equal sets

v) {negative natural numbers} and {50th day of a month} equal sets

vi) {Even natural numbers} and {odd natural numbers} equivalent sets

7. i) {2, 4, 6, 8, ..., 800} - finite sets

ii) {...., -5, -4, -3, -2} infinite sets

iii) {x : x is an integer between -60 and 60} finite sets.

iv) {No. of electrical appliances working in your house} finite sets

v) {x : x is a whole number greater than 20}

vi) {x : x is a whole number less than 20.} finite sets.

8) i) {..., -8, -4, 0, 4, 8} is a finite set. (false)

ii) {-32, -28, -24, -20, ..., 0, 4, 8, 16} is an infinite set (false)

iii) {x : x is a natural number less than 1} is the empty set. (True)

iv) {whole numbers between 15 and 16} = Natural numbers between 5 and 6.. (True)

v) {odd numbers divible by 2} is the emty set. (True)

vi) {Even natural numbers divisible by 3} is the empty set. (False)

vii) {x ; x is positive and x < 0} is the empty set. (True)

viii) ..., -5, -3, -1, 1, 3, 5, ... is a finite set (False)

9) i) A = Girls with ages below 15 years and B = Girls with ages below 15 years
Ans - Disjoint sets since girls with ages below and above is not common

ii) C = Boys with ages above 20 years and D = Boys with ages above 27 years
Ans - overlapping sets, since Boys above 27 years are also above 20 years.

iii) A = Natural numbers between 3 and 6
B = Natural numbers between 5 and 9

ans→ Over lapping sets, as natural numbers from 5 to 59 are common to both the sets.

iv) P = Students of class IX studying in I.C.S.E Board 3 and 4
Q = Students of class IX

ans→ Over lapping sets, as students of class IX studying in I.C.S.E. Board are common

v) A = Natural numbers that are multiples of 3 and less than 3a and
B = Natural numbers divisible by 4 and lying between 2 and 45

ans→ Over lapping sets as natural numbers is common to both the sets.

vi) P = Letters in the world 'ALLAHABAD' and
Q = Letters in the world 'MISSISSIPPI'.

ans→ Disjoint sets since no letter is common to both the sets.