EQUAL SETS:

Two sets are said to be equal if the elements of the two sets are the same.

EX: A = {1, 2, 3, 4}

B = {1, 2, 3, 4} SETA = SETB

EQUIVALENT SETS:

Two sets are said to be equivalent if the elements in both the set are equal.

EX: A = {1, 5, 7}

B = {A, B, C}

EXERCISE 10(D)

1. (ii) {3, 5, 7, ...} Infinite

(iii) {1, 2, 3, 4} Finite

(iii) {...., -3, -2, -1, 0, 1, 2} Infinite

(iv) {20, 30, 40, 50, ... 20} Finite

2. (i) Set of counting numbers between 5 and 6. yes

(ii) Set of odd nos. between 7 and 19. No

(iii) Set of odd nos. between 7 and 9. yes

(iv) Set of even no. that are not divisible by 2. yes

(v) {0}. ~~yes~~ No

3. (i) $\{3,5,7\}$ & $\{5,3,7\}$ Equal & Equivalent both

(ii) $\{8,6,10,2\}$ & $\{3,2,4,6\}$ Equivalent but not equal

(iii) $\{7,7,2,12\}$ and $\{1,2,7\}$ Equal but not equivalent

(iv) $\{2,4,6,8,10\}$ and $\{a,b,d,c,m\}$ Equivalent but not equal

4. (i) Set of integers = infinite

(ii) {Multiples of 5} = infinite

(iii) {Fractions between 1 and 2} = infinite

(iv) {No. of people in India} = finite

(v) {Set of trees in the world} = infinite

(vi) Set of leaves on a tree = finite

(vii) Set of children in all the schools of Delhi = finite

(viii) $\{\ldots, -4, -2, 0, 2, 4, 6, 8\}$ = infinite

(ix) $\{-12, -9, -6, -3, 0, 3, 6, \ldots\}$ = infinite

(x) {No. of points in a line segment 4cm long} = infinite

5. (i) {Prime nos. divisible by 2} = No

(ii) {Negative natural nos.} = Yes

(iii) {Women with height 5 metre} = No

(iv) {Integers less than 5} = No

(v) Prime numbers between 17 and 23} = No

(vi) Set of even not. ~~less than~~ divisible by 2 = Yes

(vii) Set of multiples of 3 that are more than 9 & less than 15. = No

6. (i) {Natural no. less than five} & {Letters of the word 'BOAT'}
= Equivalent

(ii) {2, 4, 6, 8, 10} & {even ~~no~~ natural no. less than 12}.
= Equal & Equivalent

(iii) {1, 3, 5, 7, ...} and set of odd natural nos.
= Equal and equivalent

(iv) {letters of the word 'MEMBER'} and {letters of the word 'REMEBER'} = equal and equivalent

(v) {Negetive natural no.} & {30th day of a month}
= Equal

(vi) {Even natural no.} & {Odd natural no.} = equivalent

* Disjoint Sets:

If two given sets have no element in common, they are disjoint sets.

EX: A = {1, 3, 7}

B = {6, 9, 10}

A and B are disjoint sets.

* OVERLLAPING SETS:

If two given sets have at least one element in common, they are said to be overlapping sets. EX: A = {1, 3, 7}

C = {1, 2, 5, 9}

A and C are overlapping sets.

7. (i) {2, 4, 6, 8, ..., 800} = Finite

(ii) {..., -5, -4, -3, -2} = Infinite

(iii) {x : x is an integer between -60 and 60} = Finite

(iv) {No. of electrical appliances working in your house} = Finite

(v) {x : x is a whole no. ~~less~~ greater than 20} = Infinite

(vi) {x : x is a whole no. less than 20} = Finite

8. (i) A = {Lines with one tutor} {..., -8, -4, 0, 4, 8} is a finite set. = Infinite false

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

(iii) {x : x is a natural no. less than 1} is the empty set. = True

(iv) {Whole nos. between 15 and 16} = {Natural nos. between 5 and 6} = True

(v) {Odd nos. divisible by 2} is the empty set = ~~False~~ True

(vi) {Even natural nos. 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 19 years}
B = {Girls with age above 19 years}

As there is no common element in these 2 sets therefore set A and B are disjoint set.

(ii) C = {Boys with age above 20 years}
D = {Boys with ages above 27 years}

Boys above 27 years are also above 20 years therefore set C and D are overlapping sets.

(iii) A = {Natural nos. between 35 and 60}
B = {Natural nos. between 50 and 80}

Natural Nos. from 51 to 59 are common

in both sets therefore set A & B are overlapping sets.

(iv) P = { Students of class IX studying in ICSE Board }
Q = { Students of class IX } studying

As students of class IX studying in ICSE Board are common in both sets, therefore A and B are overlapping seeds.

(v) A = {Natural nos. that are multiples of 3 and less than 30} = {3, 6, 9, 12, 15, 18, 21, 24, 27}
B = { Natural nos. divisible by 4 and lieing between 20 and 45} = {24, 28, 32, 36, 40, 44}

As 24 is common in both the sets, therefore set A and B are overlapping set.

(vi) P = { letters in the word 'ALLAHABAD' } = {A, L, H, B, D}
Q = { letters in the word 'MUSSOORIE' } = {M, U, S, O, R, I, E}

No letter is common in both the sets so set P and Q are disjoint sets.