

## Exercise 10 D

4) State ~~the~~ whether the given set is infinite or finite:

i)  $\{3, 5, 7, \dots\}$

Ans:- Infinite

ii)  $\{1, 2, 3, 4\}$

Ans:- finite

iii)  $\{\dots, -3, -2, -1, 0, 1, 2\}$

Ans:- infinite

iv)  $\{20, 30, 40, 50, 200\}$

Ans:- finite

2) Which of the following sets is empty?

i) Set of counting numbers between 5 and 6. 

Yes
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ii) Set of odd numbers between 7 and 19. 

No
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- iii) Set of odd numbers between 7 and 9. Yes
- iv) Set of even number that are not divisible by 2. Yes
- v)  $\{0, 3\}$ . Yes

3. State which pair of sets given below are equal sets and which are equivalent:

- i)  $\{3, 5, 7\}$  and  $\{5, 3, 7\}$  Equal
- ii)  $\{8, 6, 10, 12\}$  and  $\{3, 2, 4, 6\}$  Equivalent
- iii)  $\{7, 7, 2, 1, 2\}$  and  $\{1, 2, 7\}$  Equal
- iv)  $\{2, 4, 6, 8, 10\}$  and  $\{a, b, d, e, m\}$  Equivalent

4. State which of the following finite ~~and~~ sets and which are infinite sets.

- i) Set of integers infinite
- ii) Multiple of 5 infinite
- iii) Fraction between 1 and 2 infinite
- iv) Number of people in India finite
- v) Sets of trees in the world infinite
- vi) Sets of leaves on a tree finite school
- vii) Set of children in all the ~~children~~ <sup>delhi</sup> ~~in~~ <sup>finite</sup> ~~all the~~ <sup>delhi</sup> ~~schools~~
- viii)  $\{\dots, -4, -2, 0, 2, 4, 6, 8\}$  infinite
- ix)  $\{-12, -9, -6, -3, 0, 3, 6, \dots\}$  infinite
- x) Number of ~~the~~ ~~set~~ points in line segment 4 cm long infinite

5. State whether or not the following sets are empty.

- i)  $\{ \text{Prime numbers divisible by 2} \}$  Not empty
- ii)  $\{ \text{Negative Natural Number} \}$  Empty
- iii)  $\{ \text{Woman with height 5 meters} \}$  Empty
- iv)  $\{ \text{Integers less than 5} \}$  Not Empty
- v)  $\{ \text{Prime number between 17 and 23} \}$  Not Empty
- vi)  $\{ \text{Set of even number not divisible by 2} \}$  Empty and
- vii)  $\{ \text{Set of multiple of 5 that are more than 9, less than 15} \}$  Not Empty

6. State if the given pairs of set are equal sets or equivalent sets.

i)  $\{ \text{Natural Number less than 5} \}$  and  $\{ \text{letters of word bear} \}$   
Ans: Equivalent

ii)  $\{ 2, 4, 6, 8, 10 \}$  and  $\{ \text{even natural numbers less than 10} \}$   
Ans: Equal and equivalent

iii)  $\{ 1, 3, 5, 7, \dots \}$  and  $\{ \text{set of odd natural numbers} \}$   
Ans: Equal and equivalent

iv)  $\{ \text{Member of the word MEMBER} \}$  and  $\{ \text{Letter of the word REMEMBER} \}$   
Ans: Equal and equivalent

v)  $\{ \text{Negative Natural Numbers} \}$  and  $\{ 50^{\text{th}} \text{ day of a month} \}$   
Ans: Equal

vi)  $\{ \text{Even natural numbers} \}$  and  $\{ \text{Odd natural numbers} \}$   
Ans: Equivalent

7. State whether the following are finite or infinite sets:

i)  $\{ 2, 4, 6, 8, \dots, 800 \}$   
Ans: finite

i)  $\{ \dots -5, -4, -3, -2 \}$   
Ans: - Infinite

ii)  $\{ x : x \text{ is an integer between } -60 \text{ and } 60 \}$   
Ans: finite.

iii)  $\{ \text{Number of electrical appliances working in your house} \}$   
Ans: finite

iv)  $\{ x : x \text{ is a whole number greater than } 20 \}$   
Ans: - infinite

v)  $\{ x : x \text{ is a whole number less than } 20 \}$   
Ans: - finite

8. For each statement given below write true or false.

i)  $\{ \dots -8, -4, 0, 4, 8 \}$  is a finite set - false

ii)  $\{ -30, -28, -24, -20, \dots, 0, 4, 8, 16 \}$  is an infinite set.  
false

iii)  $\{ x : x \text{ is a natural number less than } 1 \}$  is the empty set.  
true

iv)  $\{ \text{Whole number between } 15 \text{ and } 16 \} = \{ \text{Natural numbers between } 5 \text{ and } 6 \}$  true

v)  $\{ \text{Odd number divisible by } 2 \}$  is the empty set. true

vi)  $\{ \text{Even natural numbers divisible by } 3 \}$  is the empty set. true

vii)  $\{ x : x \text{ is positive and } x < 0 \}$  is the empty set. true

viii)  $\{ \dots, -5, -3, -1, 1, 3, 5 \}$  is a finite set. false

9. State, giving reason, which of the following pair of sets are disjoint sets and which are overlapping sets.

i) ~~A~~  $A = \{ \text{Girls with age below 15 years} \}$   
 $B = \{ \text{Girls with age above 15 years} \}$

Ans: - Disjoint Sets

ii)  $C = \{ \text{Boys with age above 20 years} \}$   
 $D = \{ \text{Boys with age above 27 years} \}$

Ans: - overlapping

iii)  $A = \{ \text{Natural number between 35 and 60} \}$   
 $B = \{ \text{Natural number between 50 and 80} \}$

Ans: - overlapping

iv)  $P = \{ \text{Students of IX studying in ICSE Board} \}$  and  
 $Q = \{ \text{Student of IX} \}$

Ans: - Overlapping.

v)  $A = \{ \text{natural numbers that are multiple of 3 and less than 30} \}$

$B = \{ \text{Natural numbers divisible by 4 and laying between 20 to 45} \}$

Ans: - Overlapping.

vi)  $P = \{ \text{Letter in ALLAHABAD} \}$  and  
 $Q = \{ \text{Letter in MUSSOORIE} \}$

Ans: - Disjoined

