EXERCISE 1.2

1. Which of the following are examples of the null set

(i) Set of odd natural numbers divisible by 2

Solution:- Is a null set.

(ii) Set of even prime numbers

Solution:- Is not a null set.

(iii) { x : x is a natural numbers, x < 5 and x > 7 }

Solution:- Is a null set.

(iv) { y : y is a point common to any two parallel lines}

Solution:- Is a null set.

2. Which of the following sets are finite or infinite

(i) The set of months of a year

Solution:- Finite Set

(ii) {1, 2, 3, . . .}

Solution:- Infinite Set

(iii) {1, 2, 3, . . .99, 100}

Solution:- Finite Set

(iv) The set of positive integers greater than 100

Solution:- Infinite Set

(v) The set of prime numbers less than 99

Solution:- Finite Set

3. State whether each of the following set is finite or infinite:

(i) The set of lines which are parallel to the x-axis

Solution:- Infinite Set

(ii) The set of letters in the English alphabet

Solution:- Finite Set

(iii) The set of numbers which are multiple of 5

Solution:- Infinite Set

(iv) The set of animals living on the earth

Solution:- Finite Set

(v) The set of circles passing through the origin (0, 0)

Solution:- Infinite Set

4. In the following, state whether A = B or not:

(i) A = { a, b, c, d } B = { d, c, b, a }

Solution:-

(ii) A = { 4, 8, 12, 16 } B = { 8, 4, 16, 18}

Solution:- $A \neq B$

(iii) A = {2, 4, 6, 8, 10} B = { x : x is positive even integer and $x \leq 10$}

Solution:- A=B

(iv) A = { x : x is a multiple of 10}, B = { 10, 15, 20, 25, 30, . . . }

Solution:- $A \neq B$

5. Are the following pair of sets equal ? Give reasons.

(i) A = {2, 3}, B = {x : x is solution of x 2 + 5x + 6 = 0}

Solution:- The quadratic equation $x^2 + 5x + 6 = 0$ can be solved as:

$x^2 + 3x + 2x + 6 = 0$

$x (x + 3) + 2 (x + 3) = 0$

$(x + 2)(x + 3) = 0$

$x = - 2$ or $x = - 3$

Hence B = {- 2, - 3}

But A = {2, 3}.

Therefore,$A \neq B$

(ii) A = { x : x is a letter in the word FOLLOW}

B = { y : y is a letter in the word WOLF}

Solution:- Hence, A = {F, L, O, W}; B = {W , O, L, F}

The elements of sets A and B are same.

Therefore,

A = B

6. From the sets given below, select equal sets :

A = { 2, 4, 8, 12}, B = { 1, 2, 3, 4}, C = { 4, 8, 12, 14}, D = { 3, 1, 4, 2} E = {–1, 1}, F = { 0, a}, G = {1, –1}, H = { 0, 1}

Solution:-6. B= D, E = G