Sets

EXERCISE : 5.1

1

i) All State of India

vii) Last three days of a week

viii) All months of a year having atleast 30 days.

The above three are set because they are well defined

Remaining all are not sets, they are not well defined.

2 (iii) and (iv) are true

(i) is false because c is not a vowel

(ii) is false because $\{a\}$ is a set and not element

(vi) is false because b is not a vowel, so $b \notin A$. of

Course, $a \in A$

v) is false, $\{a, i, u\}$ is a set and not elements

3 i) The set of first six letters of alphaset

ii) {prime numbers less than 20}

iii) {last three days of a week}

iv) {Months of a years whose name begin with a vowel}

4

i) $\{12, 14, 16, 18, 20, 22 \text{------}, 48\}$; $\{x : x = 2n, n \in N$ and $5 < n < 25\}$

ii) {Jan, Mar, May, July, Aug, Oct, Dec} ;

{x | x is a month of a year having more than 30 days}

iii) $\{0, 1, 4, 9\}$; {x | x is a perfect square one digit number}

iv) $\{1, 2, 3, 4, 6, 9, 12, 18, 36\}$; {x | x is a factor of 36}

5

i) $\{0, 4, 8, 12, 16\}$: {whole numbers which are divisible by 4 and less than 20}

ii) $\{1, 4, 9, 16, 25, 36, 49\}$; {Squares of first seven natural numbers}

iii) $\{-1, 1, 3, 5, 7\}$; {odd integers which lie between -2 and 8}

iv) {U, L, T, I, M, A} ; {letters in the word ULTIMATUM}

6

i) $\{5, 6, 7, 8, 9\}$

ii) $\{-12, -6, 0, 6, 12\}$

iii) $\{0, 3, 8, 15\}$

iv) $\{1\}$

v) $\{N, T\}$

vi) $\{1, 0, 5, 6, 7\}$

7

i) $\{x : x$ is an odd natural number and $x < 30\}$

ii) $\{x \mid x$ is a prime number and $x < 30\}$

iii) $\{x \mid x = n^2, n \in N\}$

iv) $\{x \mid x = \frac{1}{n}, n \in N$ and $5 \leq n \leq 20\}$

v) $\{x \mid x = 8p, p \in I$ and $-2 \leq p \leq 5\}$

vi) $\{x : x$ is a month of a year whose name begins with letter "J"$\}$

8

i) $\{$ Vowels in the word COMPETITION $\}$

ii) $\{x : x$ is a vowel in the word COMPETITION$\}$

iii) $\{O, E, I\}$

EXERCISE : 5.2

1

i) finite set, having seven colours.

ii) empty set, having no element in between

iii) infinite set, having infinite elements

iv) infinite set

v) Finite set, having finite digits i.e 6

vi) Finite set, having 6 letters

vii) Infinite set, have infinite numbers

viii) Finite set, have 8 prime factors

ix) Empty set, have no vowel in the word

x) Finite set, 12 element in it

2

(i), (ii), (iii), (v) represents same sets

(iv) is different from other sets

3. A, B and E are equal

C, F and H are equal

D and G are equal.

4. A, C, E and G are equivalent, These are having 7 elements.

B and D are equivalent, having 3 elements

F and H are equivalent, having 12 elements

I and J are equivalent, having 52 elements

5 i) $A \subset B$, $B \subset A$, $A = B$

ii) $A \subset B$ but $B \not\subset A$

iii) $B \subset A$ but $A \subset B$

iv) neither $A \subset B$ nor $B \subset A$

6 i) False

ii) False

iii) True, Because there are 5 elements in each

7 i) ϕ

ii) ϕ, $\{3\}$, $\{5\}$, $\{3, 5\}$

iii) ϕ, $\{2\}$, $\{4\}$, $\{6\}$, $\{2,4\}$, $\{4,6\}$, $\{2,6\}$

$\{2,4,6\}$

8

i) $\xi = N$

$A = \{2, 4, 6, 8\}$

ii) $\xi = W$

$A = \{0, 2, 4, 6, 8\}$

iii) $\xi = I$

$A = \{\ldots, -4, -2, 0, 2, 4, 6, 8\}$