Q No 1 : Which of the following are sets. Justify your ans:

(i) The collection of all months of a year begining with J.

Here given collection is {January, June, July}

Since the collection is well defined without any doubt.

∴ It is a set.

(ii) The collection of ten most talented writers of India.

The term 'most talented' is not definite. ie it is indefinite. because A writer talented to a person may not be so to the other person.

So given collection is not a set.

(iii) A team of eleven best Cricket batsman of World.

Not a set as the term 'best' is vague ie indefinite

(iv) The collection of all boys in your class.

Here the members of the collection are:

Boys in the Class.

Collection is well defined and hence it is a set.

(v) The collection of all natural numbers less than 100.

Here the members of collection are 1, 2, 3 ..... 98, 99.

∴ The collection is well defined and hence it is a Set.

(vi) A collection of novels written by Writer Munshi Prem Chand.

Members of collection are Novels written by Munshi Prem Chand. The collection is well-defined and hence it is a Set.

(vii) The Collection of all even integers.

Members of collection are : 2, 4, 6, 8, ...

Collection is well-defined and thus it is a set

(viii) The collection of questions in this chapter.

The members of collection are : Questions in this chapter.

Collection is well-defined and hence a set.

(ix) A collection of most dangerous animals of the world.
The term most dangerous is vague ie. indefinite
An animal may be dangerous to one person and not to any other person. So it is not a set.

Q No. 2. Let $A = \{1, 2, 3, 4, 5, 6\}$. Insert the appropriate symbol $\in$ or $\notin$ in the blank spaces.

Sol: (i) $5 \in A$ (ii) $8 \notin A$ (iii) $0 \notin A$

(iv) $4 \in A$ (v) $2 \in A$ (vi) $10 \notin A$

Q No. 3 Write the following sets in Roster form:

(i) $A = \{x : x \text{ is an integer and } -3 < x < 7\}$

Roster Form $A = \{-2, -1, 0, 1, 2, 3, 4, 5, 6\}$

(ii) $B = \{x : x \text{ is a natural number less than } 6\}$

$B = \{1, 2, 3, 4, 5\}$

(iii) $C = \{x : x \text{ is two-digit Natural Number such that sum of digits is } 8\}$

$C = \{80, 17, 71, 26, 62, 35, 53, 44\}$

$= \{17, 26, 35, 44, 53, 62, 71, 80\}$

(iv) $D = \{x ; x \text{ is prime number which is divisor of } 60\}$

$D = \{2, 3, 5\}$

(v) E = The set of all letters of word TRIGONOMETRY

$= \{T, R, I, G, O, N, M, E, Y\}$

(vi) F = Set of all letters of Word BETTER

$= \{B, E, T, R\}$

QNo 4: Write the following sets in Set-builder form:

Sol. (i) $\{3, 6, 9, 12\} = \{3\times1, 3\times2, 3\times3, 3\times4\}$.

$= \{x : x = 3n \text{ and } 1 \leq n \leq 4\}$

(ii) $\{2, 4, 8, 16, 32\} = \{2^1, 2^2, 2^3, 2^4, 2^5\}$

$= \{x; x = 2^n \text{ and } 1 \leq n \leq 5\}$

(iii) $\{5, 25, 125, 625\} = \{5^1, 5^2, 5^3, 5^4\}$

$= \{x; x = 5^n \text{ and } 1 \leq n \leq 4\}$

(iv) $\{2, 4, 6 \text{ ---- }\} = \{x; x \text{ is an even natural Number}\}$.

(v) $\{1, 4, 9 \text{ ... } 100\} = \{(1)^2, (2)^2, (3)^2, \text{ ---- } (10)^2\}$

$= \{x; x = n^2 \text{ and } 1 \leq n \leq 10\}$

QNo 5: List all the elements of following sets:

(i) $A = \{x; x \text{ is an odd Natural Number}\}$

$= \{1, 3, 5, 7, \text{ ------ }\}$

(ii) $B = \{x; x \text{ is an integer}, -\frac{1}{2} < x < \frac{9}{2}\}$

$= \{0, 1, 2, 3, 4\}$

(iii) $D = \{x; x \text{ is letter in the word 'LOYAL'}\}$

$= \{L, O, Y, A\}$

(iii) $C = \{x; x \text{ is an integer}; x^2 \leq 4\}$

$= \{-2, -1, 0, 1, 2\}$

(v) $E = \{x; x \text{ is month of year not having 31 days}\}$

$= \{\text{February, April, June, September, November}\}$

(vi) $F = \{x; x \text{ is consonant in the English alphabet which precedes k}\}$

$= \{b, c, d, f, g, h\}$.

Q No. 6 Match each of set on left in Roster form with the same set on Right described in Set-builder form. [4]

(i)	$\{1, 2, 3, 6\}$	(a) $\{x; x$ is a prime number and divisor of $6\}$
(ii)	$\{2, 3\}$	(b) $\{x; x$ is natural number less than $10\}$
(iii)	$\{M, A, T, H, E, I, C, S\}$	(c) $\{x; x$ is natural number and divisor of $6\}$
(iv)	$\{1, 3, 5, 7, 9\}$	(d) $\{x; x$ is letter of word MATHEMATICS $\}$

Sol:

(i) $\leftrightarrow$ (c)

(ii) $\leftrightarrow$ (a)

(iii) $\leftrightarrow$ (d)

(iv) $\leftrightarrow$ (b)

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