2. i. $B_1 = \{6, 9, 12, 15, \ldots\}$

$= \{x : x = 3n, n \in N \text{ and } 2 \leq n\}$

ii. $B_2 = \{11, 13, 17, 19\}$

$= \{x : x \text{ is a prime number between 10 and 20}\}$

iii. $B_3 = \left\{\frac{1}{3}, \frac{3}{5}, \frac{5}{7}, \frac{7}{9}, \frac{9}{11} \ldots\right\}$

$= \left\{x : x = \frac{n}{n+2}, \text{ where } n \text{ is an odd natural number}\right\}$

iv. $B_4 = \{8, 27, 64, 125, 216\}$

$= \{x : x = n^3, n \in N \text{ and } 2 \leq n \leq 6\}$ Ans

v. $B_5 = \{-5, -4, -3, -2, -1\}$

$= \{x : x \in Z, -5 \leq x \leq -1\}$ Ans

vi. $B_6 = \{\ldots\ldots, -6, -3, 0, 3, 6 \ldots\ldots\}$

$= \{x : x = 3n, n \in Z\}$ Ans

Q. i. No, $\{1, 2, 3, 4, 16, 64\} \neq \{x : x \text{ is factor of } 32\}$

Because 64 is a not factor of 32. Ans

ii. Yes, $\{x : x \text{ is a factor of } 27\} \neq \{3, 9, 27, 54\}$

(Because 54 is not factor of 27). Ans

iii. $1 \times 124 = 124$
$2 \times 62 = 124$
$4 \times 31 = 124$

∴ Factor of $124 = 1, 2, 4, 31, 62, 124$
∴ Set of even factors of $124 = \{2, 4, 62, 124\}$ Ans

iv. $1 \times 72 = 72$
$2 \times 36 = 72$
$3 \times 24 = 72$
$4 \times 18 = 72$
$6 \times 12 = 72$
$8 \times 9 = 72$

∴ Factor of $72 = 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72$.
∴ Set of odd factors of $72 = \{1, 3, 9\}$ Ans.

v.
$$\begin{array}{r|l} 2 & 3234 \\ 3 & 1617 \\ 7 & 539 \\ 7 & 77 \\ & 11 \end{array}$$

$3234 = 2 \times 3 \times 7 \times 7 \times 11$

$\therefore$ Set of Prime factors of $3234 = \{2, 3, 7, 11\}$ Ans.

vi. $x^2 - 7x + 12 = 0$

$\Rightarrow x^2 - 4x - 3x + 12 = 0$

$\Rightarrow x(x-4) - 3(x-4) = 0$

$\Rightarrow (x-4)(x-3) = 0$

$\Rightarrow$ either $x - 4 = 0$ or $x - 3 = 0$

$x = 4$ $\Rightarrow$ $x = 3$

$\therefore \{x : x^2 - 7x + 12 = 0\} = \{3, 4\}$ is true Ans.

viii. $x^2 - 5x - 6 = 0$

$\Rightarrow x^2 - 6x + x - 6 = 0$

$\Rightarrow x(x-6) + 1(x-6) = 0$

$\Rightarrow (x-6)(x+1) = 0$

$\Rightarrow$ either $x - 6 = 0$ or $x + 1 = 0$

$x = 6$ i.e. $x = -1$

$\therefore \{x : x^2 - 5x - 6 = 0\} = \{2, 3\}$ is not true Ans.

Q.i- The set of letter in the word "MEERUT".

Ans. m, e, r, u, t

ii. "UNIVERSAL"

Ans. u, n, i, v, e, r, s, a, l

iii. $A = \{x : x = y + 3, y \in N \text{ and } y > 3\}$

$x = y + 3$

When $y = 4$, $x = 4 + 3 = 7$
When $y = 5$, $x = 5 + 3 = 8$
When $y = 6$, $x = 6 + 3 = 9$
When $y = 7$, $x = 7 + 3 = 10$
When $y = 8$, $x = 8 + 3 = 11$
.....
.....

∴ Roster form of the given set $A = \{7, 8, 9, 10, 11 \ldots\}$ (Ans)

iv. $B = \{p : p \in W \text{ and } p^2 < 20\}$

When $p^2 = 0$ When $p^2 = 4$

$p = \sqrt{0} = 0$ $p = \sqrt{4} = 2$

When $p^2 = 1$ When $p^2 = 9$

$p = \sqrt{1} = 1$ $p = \sqrt{9} = 3$

When $P^2 = 16$

$P = \sqrt{16} = 4$

∴ Roaster form of the given set $B = \{0, 1, 2, 3, 4\}$ Ans.

v. $\{5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21$

$\therefore \{6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21\}$ Ans.