## Sets Ex 1.4 Q9

(i) We know that, if a set has $n$ elements, then its power set has $2^n$ elements.

Here, $n = 1$, so there $2^1 = 2$ subsets of the given set.

The possible subsets are $\phi, \{a\}$.

(ii) The set has two elements, so power set has $2^2 = 4$ elements, namely $\phi, \{0\}, \{1\}, \{0, 1\}$.

(iii) The set has 3 elemets , so power set has $2^3 = 8$ elements,
namely $\phi, \{a\}, \{b\}, \{c\}, \{a, b\}, \{b, c\}, \{a, c\}, \{a, b, c\}$.

(iv) The set has 2 elements, so power set has $2^2 = 4$ elements, namely, $\phi, \{1\}, \{\{1\}\}, \{1, \{1\}\}$.

(v) The set has 1 element, so power set has $^1 = 2$ elements, namely $\phi, \{\phi\}$.

## Sets Ex 1.4 Q10

(i) We know that if $A$ is a set and $B$ a subset of A, then $B$ is called a proper subset of $A$ if $B \subseteq A$ and $B \neq A$, $\phi$ and is written as $B \subset A$ or $B \subseteq A$.

Hence, the proper subsets are given by $\{1\}, \{2\}$.

(ii) The proper subsets are given by $\{1\}, \{2\}, \{3\}, \{1, 2\}, \{2, 3\}, \{1, 3\}$.

(iii) The only subsets of the given set are $\phi$ & $\{1\}$.
Hence, there are no proper subsets.

## Sets Ex 1.4 Q11

We know that, if $A$ is a set having $n$ elements then power set of $A$, namely $P(A)$ has $2^n$ elements. Out of this $A$ is not proper subset.

Hence, the total number of proper subsets of a set consisting of $n$ elements in $2^n - 1$

## Sets Ex 1.4 Q12

The symbol '$\Leftrightarrow$' stands for if and only if (in short if).
In order to show that two sets $A$ and $B$ are equal we show that $A \subseteq B$ and $B \subseteq A$.

We have $A \subseteq \phi$. $\because$ $\phi$ is a subset of every set

$\therefore$ $\phi \subseteq A$

Hence $A = \phi$
To show the backward implication, suppose that $A = \phi$
$\because$ every set is a subset of itself
$\therefore$ $\phi = A \subseteq \phi$

Hence, proved.

*********** END **********