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 $B \neq A$, ϕ 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 ϕ & $\{1\}$.
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 $A \subseteq \phi$. $\because$ ϕ 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 **********