Exercise B (C)

1. i) If each element of set P is also an element of set Q; then P is said to be subset of Q. and Q is said to be superset of P.
   ii) Every set is a subset of itself.
   iii) The empty set is a subset of every set.
   iv) If A is a proper subset of B, then $n(A)$ is less than $n(B)$

2. i) $B \subseteq A$
   ii) $C \not\subseteq A$
   iii) $D \not\subseteq A$
   iv) $E \not\subseteq A$
   v) $F \subseteq A$

3. i) Proper subset.
   ii) Proper subset
   iii) Not a proper subset
   iv) Not a proper subset
   v) Not a proper subset

4. $A = \{2, 4, 6, 8, 10\}$
   i) True
   ii) False
   iii) False
   iv) False
   v) False
   vi) True

5. A = {a, c}
Subsets of A = { }, {a}, {c}, {a, c}
B = {p, q, r}
Subsets of B = { }, {p}, {q}, {r}, {p, q}, {q, r}, {p, r}
{p, q, r}

C = Set of digits in no. 1351
= {1, 3, 5, 1} = {1, 3, 5}
Subsets of C = { }, {1}, {3}, {5}, {1, 3}, {3, 5}, {1, 5}
{1, 3, 5}

6. i) $2^n = 2^3 = 2 \times 2 \times 2 = 8$
ii) $2^n - 1 = 2^4 - 1 = 2 \times 2 \times 2 \times 2 - 1 = 16 - 1 = 15$
iii) $2^1 = 2$
iv) $2^n - 1 = 2^2 - 1 = 2 \times 2 - 1 = 4 - 1 = 3$

7. i) A = {4, 6, 8, 10, 12}
ii) B = {9, 11, 13}
iii) C = {5, 7, 11, 13}
iv) D = {4, 6, 8}