Rem 0:

1(A). In a Boolean algebra,

P. T $(a \wedge b) \vee (b \wedge c) \vee (a \wedge b \wedge c) = b \wedge (a \vee c)$

1(B). Write DNF for $\overline{\overline{x_1} \vee (x_2 \wedge x_3)} \vee \overline{(\overline{x_1} \vee x_3)}$

Rem 1:

2. In any lattice, Prove that

i. $a \wedge (b \vee c) \geq (a \wedge b) \vee (c \wedge a)$

ii. $(a \wedge b) \vee (b \wedge c) \vee (c \wedge a) \leq (a \vee b) \wedge (b \vee c) \wedge (c \vee a)$

Rem 2

3. In a Boolean algebra, P. T $(a \wedge b) \vee (\bar{a} \wedge b \wedge \bar{c}) \vee (b \wedge c) = b$

Rem 3:

4. In a distributive lattice, P. T $(a \vee b) \wedge (b \vee c) \wedge (c \vee a) = (a \wedge b) \vee (b \wedge c) \vee (c \wedge a)$

Rem 0

5. Check if the following are Complemented lattices & justify your answer: $(S_{20}, |)$, $(S_{24}, |)$ where S_n is the set of all the positive divisors of n

Rem 1:

6. In a Boolean algebra, P. T

$(a \wedge b) \vee (a \wedge \bar{b} \wedge c) \vee (b \wedge c) = a \wedge (c \vee b)$

Rem 2:

7. Write CNF and DNF for the Boolean expression

$x_1 \vee \overline{(x_2 \vee x_3)} \wedge (\overline{x_1} \vee \overline{x_3}) \wedge (\overline{x_3} \vee x_3)$

Rem 3:

8(A).In a Boolean algebra, P. T $((a \wedge \bar{b}) \vee c) \wedge (a \vee \bar{b}) \wedge c = c \wedge (\bar{b} \vee a)$

8(B). Write DNF for $\overline{\overline{x_1} \vee (x_2 \wedge x_1)} \vee \overline{(x_1 \vee x_3)}$