

Course Work Assignment #2

(Do both questions)

Qs. 1. [50 marks]

- a) Determine the DNF of the function, $b(p, q, r)$, whose Truth Table is the following:

p	q	r	$b(p, q, r)$
F	F	F	F
F	F	T	T
F	T	F	F
F	T	T	F
T	F	F	T
T	F	T	T
T	T	F	F
T	T	T	T

- b) Simplify the function, $b(p, q, r)$.

Qs. 2. [50 marks]

- a) Show by Truth Table:

i) $\models ((p \rightarrow q) \rightarrow p) \rightarrow p$

ii) $p \vee q \models (p \rightarrow q) \rightarrow q$

iii) De Morgan's Law:

$$\neg(p \vee q) = \neg p \wedge \neg q$$

iv) $p \rightarrow q = (q \equiv p \vee q)$

- b) Determine by Truth Table whether

(a) $p \wedge (q \equiv r) = (p \wedge q) \equiv (p \wedge r)$

(b) $p \rightarrow q \rightarrow r = (p \rightarrow q) \rightarrow r$