Date: Sep 27, 2024 Day: Friday

Name : Junaid Asif
Class : BSAI (5th-Sem)
Roll No : BSAI-144

Submitted To: Dr. Qurat-ul-Ain Safdar

Subject : Knowledge Rep & Rea

ASSIGNMENT # 01

Commutativity:

P	Q	P∧Q	Q∧P	P∨Q	Q∨P
0	0	0	0	0	0
0	1	0	0	1	1
1	0	0	0	1	1
1	1	1	1	1	1

Associativity:

P	Q	R	P∧Q	(P∧Q)∧R	Q∧R	P∧(Q∧R)
0	0	0	0	0	0	0
0	0	1	0	0	0	0
0	1	0	0	0	0	0
0	1	1	0	0	1	0
1	0	0	0	0	0	0
1	0	1	0	0	0	0
1	1	0	1	0	0	0
1	1	1	1	1	1	1

Date: _____ Day: _____

P	Q	R	PVQ	(PVQ)VR	QVR	PV(QVR)
0	0	0	0	0	0	0
0	0	1	0	1	1	1
0	1	0	1	1	1	1
0	1	1	1	1	1	1
1	0	0	1	1	0	1
1	0	1	1	1	1	1
1	1	0	1	1	1	1
1	1	1	1	1	1	1

Identity Element:

P	True	P∧True = P	P∨True = True
0	1	0	1
0	1	0	1
1	1	1	1
1	1	1	1

Distributive:

P	Q	R	QVR	P∧(QVR)	P∧Q	P∧R	(P∧Q)V(P∧R)
0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	0
1	0	0	0	0	0	0	0
1	0	1	1	1	0	1	1
1	1	0	1	1	1	0	1
1	1	1	1	1	1	1	1

Date: _____ Day: _____

P	Q	R	Q∧R	P∨(Q∧R)	P∨Q	P∨R	(P∨Q)∧(P∨R)
0	0	0	0	0	0	0	0
0	0	1	0	0	0	1	0
0	1	0	0	0	1	0	0
0	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1
1	0	1	0	1	1	1	1
1	1	0	0	1	1	1	1
1	1	1	1	1	1	1	1

De-Morgen' Law:

P	Q	P∧Q	¬(P∧Q)	{¬P}	¬{Q}	(¬P)∨(¬Q)
0	0	0	1	1	1	1
0	1	0	1	1	0	1
1	0	0	1	0	1	1
1	1	1	0	0	0	0

P	Q	P∨Q	¬(P∨Q)	¬P	¬Q	(¬P)∧(¬Q)
0	0	0	1	1	1	1
0	1	1	0	1	0	0
1	0	1	0	0	1	0
1	1	1	0	0	0	0

Double-negation elimination:

P	¬P	¬(¬P) = P
0	1	0
1	0	1