ENGG 202 W2012 Midterm 2 Answers

Version 1

Q1

F=	4	kN
M=	2	kNm

Ax =	4.0	kN	→
Ay =	2.8	kN	↓
B =	2.80	kN	↑

Q2

W	6500	N
D	10	cm

F_A=	3905	N
direction	39.8	deg ∠

Q3

wmax	400	N/m
wmin	200	N/m

FBD of plate: x and y reactions at A, x reaction at B, M applied
66 N at 165 mm and 33 N at 110 mm from A

Q4

AC, AB, BC, CE, DE, FG

Q5

F1	20	N	F3	30	N
F2	40	N	M	30	Nm

F=	-10.0 **j**	N	**F=**	10.0	N ↓
M=	-10.0 **k**	Nm	**M=**	10.0	CW
D=	1.0	m			

Q6

Fa	20	N	Fc	80	N
Fb	40	N			

Ma=	-20.0 **k**	Nm	**Mc=**	-80.0 **j**	Nm
Mb=	120.0 **j**	Nm			

Q7

x dim	6	m	F	50	kN
y dim	2	m			

AB=	180.3	kN (C)
AC=	150	kN (T)
BC=	90.14	kN (T)
BD=	225	kN (C)
CD=	90.14	kN (C)
CE=	300	kN (T)

Q8

W=	200	N	x	110	deg
F=	100	N	y	75.62598	deg
L=	1.2	m	z	25	deg

T=	131.39	**k**	N				
A =(	55.76	**i**	**+**	175.17	**j** **+**	66.45	**k) N**
B =(	-21.56	**i**	**+**	0.00	**j** **+**	-25.69	**k) N**