ENGG 202 W2011 Midterm 2 Answers

Version 1

Q1 w= 2 kN/m

F =	3.0	**i**	**+**	-4.0	**j**	kN
M=				-10.0	**k**	kNm
y =	3.33	m	from A			

Q2 AC, BC, CD, DF, EF, FG

Q3

a	2.00	m
b	1	m
M	2400	Nm

F=	1823	N
Ax =	3023	N
Ay =	-192	N

Q4 FBD of bar AB: x and y reactions at A, weight of the bar at midpoint, W1 downward at B, W2 as tension force at B (15 deg from bar)

Q5 T= 50 N

M=	83.2	**i**	**+**	124.8	**j**	kNm

Q6 3-force, 3-force, 2-force, neither, 2-force, 3-force

Q7

M=	100	kNm
T=	40	kN

a)	T_{MAX} =	20.30	kN						
b)	**M_A =(**	-137.14	**i**	**+**	97.14	**j**	**+**	102.86	**k) kNm**
	A =(	11.43	**i**	**+**	34.29	**j**	**+**	-17.14	**k) kN**

Q8

x dim	12	m
F	10	kN

AC=	16.67	kN (C)
AB=	13.33	kN (T)
DF=	20	kN (T)
EG=	27.78	kN (C)
EF=	4.01	kN (T)