ENGG 202 W2013 Midterm 2 Answers

Version 1

Q1

T=	6	kN		
x=	0.6	m		
W =	15	kN		
Ax =	5.2	kN	<--	
Ay =	6.0	kN	↑	
A =	7.94	kN	at	49.1 . \ deg

Q2

F1	350	N		
F2	850	N		
F_R=	850	N	↑	
x from P=	-3.24	m		

Q3

x	4	m		
FBD of bar: force at 60 deg from horiz at left, force at α from vert at r				
α =	52.41	degrees		

Q4

F	40	kN	e=	2	m	
			a=	1.5	m	
AB =	50	kN	(C)			
BC =	30	kN	(C)			
BG =	40	kN	(T)			

Q5

m	125	kg						
d	0.125	m						
T=	1053.3	N						
T=	255.469	**i**	-	613.1	**j**	+	817.5 **k**	N
A=	1073.0	**j**	-	817.5	**k**	N		
B=	-255.5	**i**	+	766.4	**j**	N		

Q6

w	16	kN/m		F	5	kN		
M	3	kNm						
Frx	4.698	→		Fry	2.29	↓		
(a) F_R =	5.23	kN	↘	25.98	**M_R =**	6.016	kNm	CW
(b) $\|T_B\|$ =	10.74	kN	↙					
Ax =	3.90	kN	→	Ay =	8.74	kN	↑	
or **A =**	9.56	N		65.97	°	/_		