# MTH 3105 DISCRETE MATHS
# ASSIGNMENT 2
# DUE: 21ST DEC 2011

1. Prove or disprove
   a) The sum of three odd integers is an odd integer.
   b) The sum of four consecutive integers is divisible by 4.

2. Given 20 different types of inputs to a program, in how many ways can 8 of them be selected if
   a) Order does not matter
   b) Order matters

3. A certain class consists of 12men and 16 women. How many committees can be chosen from this class consisting of
   a) Seven people?
   b) Three men and four women?
   c) Seven women or seven men?

4. Suppose that integers m,l,j and p satisfy m=pl+j. show that p|m if and only if p|j.

5. Using induction , prove the following

   a) Given that $F_1=1, F_2=1$ and $F_n=F_{n-2}+F_{n-1}$, prove that $F_{3n}$ is even for every integer $n\geq 1$.

   b) $x^0+x^1+x^2+\ldots..+x^n = (x^{n+1}-1)/(x-1)$ for every $n\geq 1$.

**N.B: The assignment to be done in groups of 10. Groups less than 10 people will be penalized.**
**The deadline should be adhered to.**