IOE 543
Homework 10
Due in class on Thursday 12/02

1. Consider the following problem: $1||\Sigma w_j T_j$

Jobs	pj	dj	wj
1	8	8	3
2	3	4	5
3	7	9	5
4	2	10	6
5	2	4	2
6	3	5	6

   Follow the procedure for Genetic Algorithms in class for 3 iterations with a population size of 10 individuals, with the following modification:
   Instead of using mutation, use immigration. So randomly create an immigrant individual who randomly replaces any of the 10 individuals that you get after crossover.
   Make sure you use the same fitness function ($1/ w_j T_j$) for calculating the fitness of an individual.

   What is the (best) solution you obtained? Do you think it is optimal? If so, why and if not, why not?

   Important: When presenting your answers, explicitly give the algorithmic procedure you followed in order to get full credit. Submission of an Excel sheet's printout without any algorithmic description will NOT be awarded credit.

2. Problem 9.1 from Pinedo.
   Add to the problem, one additional part:
   Is the completion rate an increasing or decreasing function of t?

3. Problem 9.2 from Pinedo.
   Add to the problem, one additional part:
   Is the completion rate an increasing or decreasing function of t? Compare the answer with the one obtained in the previous problem.

4. Problem 9.5 from Pinedo. (Note: Excel might be a useful tool here).