

**ISyE 3104 Fall08**  
**Homework 8 (25 points)**  
**Due 23<sup>rd</sup> of October**

1) Nituba is a warehouse for distributing home appliance distributor. One type of product that Nituba distributes is a new SL model dish washer. For that product the warehouse decides to use the (Q,R) model and collects the following data. Product costs \$200 and the annual interest rate is 20%. Annual demand is normally distributed with a mean 5200 and standard deviation of 72.111. Cost of placing an order is \$100 and the cost of each stockout occasion is \$400. Order lead time is expected to be 1 week (1/52 years). Answer the following questions based on the data provided:

- a) **(2 Points)** Compute the mean and standard deviation of demand during lead time.
  
- b) **(4 Points)** If the firm wants to achieve a 95% type 1 service level, what are the optimal (Q,R) values?
  
- c) **(10 Points)** If the firm wants to achieve a 95% type 2 service level, what are the optimal (Q,R) values?
  
- d) **(5 Points)** Interpret type 1 and 2 service levels and explain why R is higher under type 1 service level requirement.
  
- e) **(4 Points)** What are the corresponding imputed shortage costs for part b and c.