**EASTERN MEDITERRANEAN UNIVERSITY**



**Department of Industrial Engineering**

**IENG584 Advanced Quality Engineering**

**HOMEWORK Spring 2018-19**

1. Draw the type-B OC curve for the single-sampling plan
2. *n* 50, *c* 1.
3. *n* 100, *c* 2.
4. Suppose that a product is shipped in lots of size *N* 5000. The receiving inspection procedure used is singlesampling with *n* 50 and *c* 1.
   1. Draw the type-A OC curve for the plan.
   2. Draw the type-B OC curve for this plan and compare it to the type-A OC curve found in part (a).
   3. Which curve is appropriate for this situation?
5. Find a single-sampling plan for which
6. *p*1 0.01, *α* 0.05, *p*2 0.10, and *β*0.10.
7. *p*1 0.05, *α* 0.05, *p*2 0.15, and *β* 0.10.
8. *p*1 0.02, *α* 0.01, *p*2 0.06, and *β* 0.10. (use the monograph from the textbook to estimate the required values)
9. A company uses the following acceptance-sampling procedure. A sample equal to 10% of the lot is taken. If 2% or less of the items in the sample are defective, the lot is accepted; otherwise, it is rejected. If submitted lots vary in size from 5000 to 10,000 units, what can you say about the protection by this plan? If 0.05 is the desired LTPD, does this scheme offer reasonable protection to the consumer?
10. A company uses a sample size equal to the square root of the lot size. If 1% or less of the items in the sample are defective, the lot is accepted; otherwise, it is rejected. Submitted lots vary in size from 1000 to 5000 units. Comment on the effectiveness of this procedure.
11. Suppose that a single-sampling plan with *n* 150 and *c* 2 is being used for receiving inspection where the supplier ships the product in lots of size *N* 3000.
    1. Draw the OC curve for this plan.
    2. Draw the AOQ curve and find the AOQL.
    3. Draw the ATI curve for this plan.
12. A product is shipped in lots of size *N* 2000. Find a Dodge–Romig single-sampling plan for which the LTPD 1%, assuming that the process average is 0.25% defective. Draw the OC curve and the ATI curve for this plan. What is the AOQL for this sampling plan?
13. Consider rectifying inspection for single-sampling. Develop an AOQ equation assuming that all defective items are removed but *not* replaced with good ones.