Indian Statistical Institute, Bangalore

M.S (QMS) First Year

Second Semester - Statistical Process Control II

Final Exam Duration: 3hrs Date: 30th Apr 2015

1.

a) Define the procedure of item-by-item sequential-sampling plan.

b) Derive an item-by-item sequential sampling plan for which

$$P_1 = 0.01, \quad \alpha = 0.05, \quad P_2 = 0.10, \quad \beta = 0.10$$

[4+10 = 14]

2. Write a short note on MIT STD 105E. Describe different inspection level and switching rules. Define the procedure of selection of a sampling plan.

[4+3+3 = 10]

3.

a) Explain the difference between a single sampling plan with zero as acceptance number and the chain sampling plan.

b) Define the procedure of a Chain Sampling Plan.

C) Compare the performance of a Chain Sampling Plan (n = 5, i = 2) with (n = 5) and c = 0 for both by comparing their OC curves.

d) State the conditions necessary for chain sampling plan to work.

[2+2+10+4 = 18]

4. Suppose that a continuous assembly process of manufacturing supports the use of continuous sampling plan. Determine three different CSP – 1 sampling plans meeting the AOQL of 0.198%. [12]

5. A company manufacturing tea, the tea packets are filled by filling machines. In that company there are 4 filling machines and in each machine there are 2 filling nozzles. Define a suitable SPC technique to control the weight of the filled packets. [6]

6.

a) Write a short note on Taguchi-s β-correction system.

b) Derive the β-correction factor for a continuous characteristic in a manufacturing process. [2+10 = 12]