LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **STATISTICS**

THIRD SEMESTER – **NOVEMBER 2022**

PST 3503 – STATISTICAL QUALITY CONTROL

Date: 28-11-2022 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

SECTION – A **(10×2=20)**

Answer ALL the Questions.

1.	Define Statistical Quality Control.
2.	What is assignable cause in SQC?
3.	State the use of V-mask diagram in SQC.
4.	Give the formula for obtaining CUSUM control chart.
5.	What are tolerance limits in SQC?
6.	What is average outgoing quality?
7.	Define OC for sampling inspection plan
8.	Define producer's risk.
9.	Define Six sigma.
10.	What are the main methods of six sigma?

SECTION - B

Answer any FIVE of the following Questions. **(5 x 8 = 40)**

11.	Discuss various parts of Shewhart's Control Charts.
12.	What do you understand by control charts for fraction defectives? Explain its construction. Give the theoretical distribution on which the control charts are based.
13.	Describe the process of verifying statistical control using V-Mask procedure.
14.	Narrate the basic principles of CUSUM control chart for monitoring Process means.
15.	What is Average Sample Number (ASN) and Average Total Inspection (ATI). Explain the method of their calculation for single sampling plan.
16.	Explain the steps in implementing the double sampling plan.
17.	Describe i) DPO ii) DPMO iii) Process Sigma
18.	Explain principles of six sigma levels.

SECTION - C

Answer any TWO of the following Questions. **(2 x 20 = 40)**

19.	Explain the construction of a control chart for $\bar{X}$ when i) the standards are specified ii) Standards are not specified.
20.	Explain various methods of performing process capability analysis.
21.	Suppose a mobile phone company produces mobile phones in lots of 400 phones each. To check the quality of the lots, the quality inspector of the company uses a double sampling plan with $n_1 = 15$, $c_1 = 1$, $n_2 = 30$, $c_2 = 3$. Explain the procedure for implementing it under acceptance sampling plan. Suppose if the incoming quality of the lot is 0.05. What is the probability of accepting the lot on the first sample? What is the probability of final acceptance?
22.	Discuss in detail about Continuous sampling plan and modified continuous sampling plans.

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