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Total No. of Pages: 03

Total No. of Questions: 10

MBA (Sem. – 4)

QUALITY TOOLKIT FOR MANAGERS

Subject Code: MBA-954-18

M Code: 78030

Date of Examination : 31-05-2023

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of EIGHT questions carrying TWO marks each.
2. SECTIONS-B consists of FOUR Sub-sections : Units-I, II, III & IV. Student has to attempt any ONE question from each Sub-section carrying EIGHT marks each.
3. SECTION-C is COMPULSORY carrying TWELVE marks.

SECTION-A

1. Define the following terms in 2-3 lines:

- Quality
- Inspection
- Type-I error
- Variables
- Sequential Sampling
- Quality Audit
- Zero defect
- JIT system

SECTION-B

UNIT-I

2. What are quality characteristics? Explain quality function in detail.
3. Discuss various tools and techniques of statistical quality control.

UNIT-II

4. Plot and calculate the control limits for X-bar and R charts based on the first 12 samples reflecting the process before any problems were denounced.

(Assume $A2 = 1.023$; $D3 = 0$, and $D4 = 2.574$)

Sample	Screw 1	Screw 2	Screw 3	Sample	Screw 1	Screw 2	Screw 3
1	0.276	0.238	0.261	7	0.266	0.244	0.270
2	0.249	0.263	0.234	8	0.232	0.261	0.278
3	0.264	0.255	0.258	9	0.242	0.277	0.253
4	0.255	0.279	0.269	10	0.246	0.253	0.236
5	0.262	0.273	0.234	11	0.279	0.230	0.235
6	0.268	0.267	0.270	12	0.238	0.243	0.237

5. What is variability? Compare charts for variables and attributes.
6. Suppose that a lot contains 1000 units. We have decided to use the following double sampling plan:
- Pick 30 units randomly.
 - if all are correct then accept the lot,
 - if three or more are defective then reject the lot,
 - if one or two units are defective go to point 2.
 - 60 new units are selected at random.
 - if the number of defectives totally in both samples add up to at most two then accept the lot,
 - if the number of defectives totally in both samples add up to three or more then reject the lot.
- Suppose that the lot contains 2% defective units. How big is the acceptance probability?
7. Explain quality assurance with the help of suitable examples.

UNIT-IV

8. Explain ISO:9000 series of standards in detail.
9. What is 6s concept? Explain Taguchi's concept of quality in detail.

SECTION-C

10. Solve the following case study:

Frito-Lay's Quality-Controlled Potato Chips

Frito-Lay, the multi-billion-dollar snack food giant, produces billions of pounds of product every year at its dozens of U.S. and Canadian plants. From the farming of potatoes in Florida, North Carolina, and Michigan - to factory and to retail stores, the ingredients and final product of Lay's chips, for example, are inspected at least 11 times: in the field, before unloading at the plant, after washing and peeling, at the sizing station, at the fryer, after seasoning, when bagged (for weight), at carton filling, in the warehouse, and as they are placed on the store shelf by Frito-Lay personnel. Similar inspections take place for its other famous products, including Cheetos, Fritos, Ruffles, and Tostitos. In addition to these employee inspections, the firm uses proprietary vision systems to look for defective potato chips. Chips are pulled off the high-speed line and checked twice if the vision system senses them to be too brown. The company follows the very strict standards of the American Institute of Baking (AIB), standards that are much tougher than those of the U.S. Food and Drug Administration. Two unannounced AIB site visits per year keep Frito-Lay's plants on their toes. Scores, consistently in the "excellent" range, are posted, and every employee knows exactly how the plant is doing. There are two key metrics in Frito-Lay's continuous improvement quality program: (1) total customer complaints (measured on complaints per million bag basis) and (2) hourly or daily statistical process control scores (for oil, moisture, seasoning, and salt content, for chip thickness, for fryer temperature, and for weight). In the Florida plant, Angela McCormack, who holds engineering and MBA degrees, oversees a 15 -member quality assurance staff. They watch all aspects of quality, including training employees on the factory floor, monitoring automated processing equipment, and developing and updating statistical process control (SPC) charts. The upper and lower control limits for one checkpoint, salt content in Lay's chips, are 2.22% and 1.98%, respectively. To see exactly how these limits are created using SPC, watch the video that accompanies this case.

Discussion Questions:

- Angela is now going to evaluate a new salt process delivery system and wants to know if the upper and lower control limits at 3 standard deviations for the new system will meet the upper and lower control specifications noted earlier. The data (in percents) from the initial trial samples are:

Sample 1: 1.98, 2.11, 2.15, 2.06	Sample 2: 1.99, 2.0, 2.08, 1.99
Sample 3: 2.20, 2.10, 2.20, 2.05	Sample 4: 2.18, 2.01, 2.23, 1.98
Sample 5: 2.01, 2.08, 2.14, 2.16	

 Provide the report to Angela.
- What are the advantages and disadvantages of Frito-Lay drivers stocking their customers' shelves?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.