GALGOTIAS UNIVERSITY

ADMISSION NUMBER

School of Business

Bachelor of Business Administration
Semester End Examination - Aug 2024

Duration : 180 Minutes
Max Marks : 100

Sem IV - D1UA412T - Quality Management

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Identify quality in the context of product or service.	K3(3)
2)	Examine the concept of Six Sigma quality.Why is such a high quality level important?	K4(4)
3)	Identify how quality management principles can be applied in production and R&D departments within a business.	K3(6)
4)	Investigate the role of Genichi Taguchi in advancing quality engineering principles and methodologies. Analyze Taguchi's contributions to robust design, quality loss function, and Taguchi methods, and assess their impact on product development processes and quality improvement initiatives in manufacturing sectors.	K6(6)
5)	Assess the process of certification to quality system standards and its implications for businesses seeking compliance.	K6(6)
6)	Analyze the concept of "quality function deployment" (QFD) developed by Genichi Taguchi. Examine how QFD facilitates the translation of customer requirements into specific product or service characteristics to ensure customer satisfaction.	K4(8)
7)	A quality control inspector has taken 4 samples with 5 observations each at the Beautiful Shampoo Company,measuring the volume of shampoo per bottle. If the average range for the 4 samples is0.4 ounces and the average mean of the observations is 19.8 ounces,develop three sigma control limits for the bottling operation.	K3(9)
8)	Suppose you are monitoring the weight of boxes of a certain product coming off a production line. You collect samples of 5 boxes each hour over a span of 10 hours. The weights (in grams) of the samples collected is given in the	K3(9)

table.

Sample	Box 1	Box 2	Box 3	Box 4	Box 5
1	120	125	122	121	123
2	123	124	126	122	125
3	124	123	122	126	121
4	122	121	120	123	125
5	123	124	126	123	122
6	122	121	123	124	126
7	125	124	123	121	126
8	123	122	124	125	122
9	124	121	123	122	125
10	125	123	126	124	121

Calculate

(1) Calculate the mean for each sample, the overall mean of all sample means (Grand Mean) (3 marks)
(2). Construct the Mean Chart (X-Bar Chart) using these values. Let's assume the control limits are set at ±3 standard deviations from the Grand Mean (6 Marks)

9) Kinder Land Child Care uses a c-chart to monitor the number of customer complaints per week. Complaints have been recorded over the past 20 weeks. Develop and evaluate a control chart with three-sigma control limits using the following data: K5(10)

Week	Number of Complaints	Week	Number of Complaints
1	0	11	4
2	3	12	3
3	4	13	1
4	1	14	1
5	0	15	1
6	0	16	0
7	3	17	2
8	1	18	1
9	1	19	2
10	0	20	2
		Total	30

10) A manufacturing plant produces electronic components used in various consumer electronics. To monitor the quality of the production process, the plant employs a p-chart to track the proportion of defective components in samples taken at regular intervals. Over the past month, 20 samples of size 100 each were K4(12)

collected, resulting in the following data:

Sample	Proportion Defective
1	0.04
2	0.03
3	0.06
4	0.05
5	0.08
6	0.07
7	0.04
8	0.05
9	0.03
10	0.06
11	0.04
12	0.05
13	0.07
14	0.06
15	0.05
16	0.04
17	0.05
18	0.07
19	0.08
20	0.06

11) A manufacturing company, QualityTech Industries, is committed to enhancing product quality and efficiency across its production processes. As part of their quality improvement initiative, they have decided to implement various tools of Quality Management to address key challenges and optimize their operations. K6(12)

To foster a culture of quality excellence and continuous improvement among employees, discuss how could Quality Tech Industries utilize tools such as

(a) Kaizen

(b) Quality at source and

(c) Total Quality Management (TQM)

12) Chemco Plastics Ltd. produces plastic bottles. The process involves molding the plastic material into bottles of a specific size and shape. The quality control team measures the weight of each bottle produced to ensure consistency and compliance with standards. A stable and well-controlled process is crucial to maintaining the desired quality and meeting customer expectations. Create a Mean Chart (X-chart) based on provided data and Propose potential actions if the process is out of control. The control limits for a typical X-chart are usually set at ±3 standard deviations from the overall mean. Collected weight measurements of 20 bottles sampled at regular intervals over a week. The weights K5(15)

are given in the table:

1	25.2 grams
2	24.9 grams
3	25.1 grams
4	24.8 grams
5	25.0 grams
6	25.3 grams
7	24.7 grams
8	25.2 grams
9	25.0 grams
10	24.9 grams
11	25.1 grams
12	25.0 grams
13	24.8 grams
14	25.3 grams
15	25.2 grams
16	24.9 grams
17	25.0 grams
18	24.8 grams
19	25.1 grams
20	25.0 grams