UNIVERSITY COLLEGE TATI

UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DTD 3013
COURSE	: QUALITY TOOLS & MANAGEMENT
SEMESTER/SESSION	: 1-2024/2025
DURATION	: 3.0 HOURS

Instructions:

1. This booklet contains **5** questions. Answer all questions
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise up your hand and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

THIS BOOKLET CONTAINS 7 PRINTED PAGES INCLUDING COVER PAGE

Question 1

a) There are four generally accepted functions of management: planning, organizing, leading and controlling. These functions work together in the creation, execution and realization of organizational goals. **Describe** each function. (8 marks)

b) In order to achieve the aim and objective of a project in an organization, the best way to determine an effective organization is to apply a suitable management approach. There are four major common management approaches such as Classical Approach, Behavioral Approach, Systems Approach, and Contingency Approach. **Differentiate** between these approaches. (10 marks)

Question 2

Business ownership/business legal structure affects how much we pay taxes, our ability to raise money, the paperwork we need to file, and our personal liability. There are many types of business ownership/business legal structure, **classify** the criteria for five (5) types of business ownership that are popular in Malaysia. (10 marks)

Question 3

a) Personnel managers are administrative professionals who oversee the hiring process professional development of employees within an organization. **Give** four (4) functions of personnel manager. (4 marks)

b) Training and development are the processes of developing the knowledge and skills of employees to enable them to perform their jobs more efficiently. **Choose** five (5) situations when training is needed. (5 marks)

c) The methods of production can be classified into many types depending on the company's product and the organization's needs. **Interpret** Mass Production, Batch Production and Job Production. (9 marks)

Question 4

a) The 5S is a well-recognized methodology used by the Japanese to improve the work environment. "5S" stands for five (5) Japanese words that start with the letter S, *Seiri, Seiton, Seiso, Seiketsu, Shitsuke.* **Show** how this methodology could solved housekeeping problems. (10 marks)

b) Total Productive Maintenance (TPM) is a maintenance program which involves a newly defined concept for maintaining plants and equipment.

i. **Give** the seven (7) pillars of TPM. (7 marks)

ii. **Give** the main six (6) major losses of equipment? (6 marks)

iii. **Explain** three (3) direct benefits of implementing TPM. (6 marks)

c) There are number of tools that an organization can use for problem solving and process improvement. The first seven tools are often referred to as the seven basic quality tools. **Sketch** five (5) out of seven (7) of the tools. (10 marks)

Question 5

Electronics Company fills order for its electronics components and parts by trucks to customer through several distribution centers. A measure of its supply chain responsiveness is order fulfilment lead time, which is the number of days from when a company receives an order to when it is delivered to the customer. A distribution center manager has taken 15 samples of 4 order during the month and recorded the lead time for each in Table 1. **Construct** x-bar chart and R-chart with 3-sigma limits (z = 3.00). (15 marks)

Sample	Lead Time (Days)			
1	1.8	0.7	3.5	1.8
2	1.9	1.8	2.6	3.6
3	3.6	4.5	2.4	3
4	2.8	1.4	1.9	1.5
5	2.6	3.3	1.6	1.9
6	1.9	2.7	2.5	4.5
7	2.7	3.5	3.6	1.4
8	3.8	4.8	2	2.8
9	3.1	2.7	3.2	1.8
10	1.5	4.8	2.4	4.4
11	1.9	3.1	2.2	0.4
12	5.4	4.1	3.8	5.2
13	3.2	3.4	2.5	4.5
14	2.4	3.6	1.8	2.5
15	3.8	6.9	2.4	3.3

Table 1

---------- End of questions ----------

Summary of Key Formulas

Control limits for p-*Charts*

$$\bar{p} = \frac{total\ defectives}{total\ sample\ onservations}$$

$$\sigma_p = \sqrt{\frac{\bar{p}(1-\bar{p})}{n}}$$

$$\text{UCL} = \bar{p} + z\sigma_p$$

$$\text{UCL} = \bar{p} + z\sqrt{\frac{\bar{p}(1-\bar{p})}{n}}$$

$$\text{LCL} = \bar{p} - z\sigma_p$$

$$\text{LCL} = \bar{p} - z\sqrt{\frac{\bar{p}(1-\bar{p})}{n}}$$

$\bar{p}$ = the sample proportion defective; an estimate of the process average.

σ_p = the standard deviation of the sample proportion

z = the number of standard deviations from the process average.

Control limits for c-Charts

$$\bar{c} = \frac{Total\ number\ of\ defects}{number\ of\ sample}$$

$$\sigma_c = \sqrt{\bar{c}}$$

$$\text{UCL} = \bar{c} + z\sigma_c$$

$$\text{UCL} = \bar{c} + z\sqrt{\bar{c}}$$

$$\text{LCL} = \bar{c} - z\sigma_c$$

$$\text{LCL} = \bar{c} - z\sqrt{\bar{c}}$$

Control limits for $\bar{x}$-Charts

$$\text{UCL} = \bar{\bar{x}} + z\sigma_{\bar{x}}$$

$$\text{LCL} = \bar{\bar{x}} - z\sigma_{\bar{x}}$$

$\bar{\bar{x}}$ = process average $= \frac{\bar{x}_1 + \bar{x}_2 + \ldots. + \bar{x}_n}{k} = \frac{\sum \bar{x}}{k}$

σ = process standard deviation

$\sigma_{\bar{x}}$ = standard deviation of sample means $= \sigma/\sqrt{k}$

k = sample (number of subgroups)

n = sample size (number of observations in each sample)

z = the number of standard deviations from the process average

$$\bar{R} = \frac{\sum R}{k}$$

$$\text{UCL} = \bar{\bar{x}} + A_2\bar{R}$$

$$\text{LCL} = \bar{\bar{x}} - A_2\bar{R}$$

Control limits for R-Charts

$$\text{UCL} = D_4\bar{R}$$

$$\text{LCL} = D_3\bar{R}$$

Sample Size n	Factor for x̄-Chart	Factors for R-Chart	
	A_2	D_3	D_4
2	1.88	0	3.27
3	1.02	0	2.57
4	0.73	0	2.28
5	0.58	0	2.11
6	0.48	0	2.00
7	0.42	0.08	1.92
8	0.37	0.14	1.86
9	0.34	0.18	1.82
10	0.31	0.22	1.78
11	0.29	0.26	1.74
12	0.27	0.28	1.72
13	0.25	0.31	1.69
14	0.24	0.33	1.67
15	0.22	0.35	1.65
16	0.21	0.36	1.64
17	0.20	0.38	1.62
18	0.19	0.39	1.61
19	0.19	0.40	1.60
20	0.18	0.41	1.59
21	0.17	0.43	1.58
22	0.17	0.43	1.57
23	0.16	0.44	1.56
24	0.16	0.45	1.55
25	0.15	0.46	1.54