

**Semester II 2024/2025**

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| Subject | : | SECI1143 PROBABILITY & STATISTICAL DATA ANALYSIS |
| Task | : | Chapter 1 & Chapter 2 |

**INSTRUCTION:**

1. This is a **GROUP** assignment. Please clearly write the group members’ names and matric numbers on the front page of the submission.
2. This assignment contributes to **5%** of overall course marks.
3. Only **HANDWRITTEN** submission is accepted:
   1. Submissions using any reporting or statistical tools (e.g.: MS Word, MS Excel, etc.,) will be **REJECTED**.
   2. Make sure the submission is neatly written. Any submission with handwriting that is unreadable, will be **REJECTED**.
   3. For answers that need to draw graphs, using graph paper(s) is optional. You can use plain paper.
   4. Round your answers to **TWO** decimal places.
   5. Please scan/snapshot your work and save it as a **PDF** file.
4. Submission via eLearning – only **ONE** group member needs to submit on behalf of the group.

**QUESTION 1[17 MARKS]**

A pizza shop wants to improve its business by collecting customer data:

* Customer name (e.g., "Ford Cash")
* Age group (Child, Teen, Adult, Senior)
* Favorite pizza topping (Pepperoni, Veggie, Cheese)
* Rating of service (1-5 stars)
* Number of slices ordered
* Total bill amount (RM)
* Time spent eating (in minutes)

Answer the following questions:

1. Which collected customer data are qualitative, and which are quantitative? [7 marks]
2. Based on the quantitative data from the answer (a), which is/are discrete, and which is/are continuous? Justify your answers with examples. [3 marks]
3. Based on the collected customer data, identify the level of measurement for the data in terms of nominal, ordinal, interval, and ratio. Justify your answers with examples. [7 marks]

**QUESTION 2[13 MARKS]**

A pizza shop surveyed 100 customers about their favorite pizza topping:

* Pepperoni (45 customers)
* Veggie (30 customers)
* Cheese (25 customers)

Answer the following questions:

1. Construct a frequency table including relative frequencies (percentages). [4 marks]
2. Create both a bar chart and a pie chart to display this data. (Note: Label all axes/sections clearly.) [8 marks]
3. Explain why a pie chart might be less effective if the shop considers adding five more topping options (making eight total). [1 mark]

**QUESTION 3 [15 MARKS]**

The pizza shop recorded the time (in minutes) taken to prepare 30 orders:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 10 | 12 | 15 | 16 | 18 | 19 | 20 | 21 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| 32 | 33 | 34 | 35 | 36 | 38 | 40 | 42 | 45 | 50 |

Answer the following questions:

1. Construct a histogram with five bins (show bin ranges and frequencies). (Note: Label axes and title clearly.) [4 marks]
2. Calculate the minimum, first quartile (Q1), median, third quartile (Q3), and maximum based on the recorded time. [5 marks]
3. Compute the interquartile range (IQR). [1 mark]
4. Identify any outliers using the 1.5×IQR Rule. [2 marks]
5. Draw a modified box plot showing outliers (if any). [3 marks]