الجامعة الوطنية
National University
Science & Technology للعلوم والتكنولوجيا
كلية عمان البحرية الدولية
International Maritime College Oman

Final Exam
PCALC-II-I: STATISTICS
Fall 2025

Points of attention:

- For each question, the maximum earned points are specified in the question.
- Write clearly! Answers that are not readable are not marked and don't earn marks!
- All answers should be written in English using **blue or black pens** only.
- Use the pencil only for diagrams and graphs.
- Show all the calculation steps in the given space.
- When finished, submit the question paper, together with the answer scripts and the signed cover page to the invigilator.
- Any cheating/copying may result in an instant failing of the examination.

Exam Duration:	2 hours
Instructor's Name:	Muhammad Kazam Razaq
Exam Date:	28/12/2025
Program:	LTM

	40
	10

Student Information			
Name:		ID:	
Signature:			

Invigilator			
Initials:		☐ Student ID checked	
Time received:			

Question 1 **[6 marks]**

The following data gives the bonuses (in thousands of dollars) of 10 randomly selected managers.

127 82 45 99 153 61 77 108 68 278

Calculate the mean deviation for this data.

Question 2 **[9 marks]**

Fuel consumption (in litres) for Mwasalat buses is provided below.

Fuel (litres)	No. of trucks
400 – 449	9
450 – 499	11
500 – 549	21
550 – 599	16
600 – 649	12

a. Calculate the mean of the monthly salaries. (3 marks)

b. Calculate the median of the monthly salaries. (3 marks)

c. Calculate the mode of the monthly salaries. (3 marks)

Question 3 **[10 marks]**

The fuel consumption (in liters per trip) for two fleets of trucks is given below.

Fleet A: 62 65 60 70 68 63 66 61 69

Fleet B: 55 57 52 59 54 60 56 58 53

Find coefficient of variation to determine which fleet has more variable fuel consumption.

Question 4 **[7 marks]**

Find below the data recorded by Dhofar bank on the number of customers using mobile banking and monthly online transactions.

Mobile Users	Transactions
500	800
700	1100
900	1350
1100	1600
1300	1900

a. Compute the correlation coefficient. (6 marks)

b. Give a brief explanation of the type of relationship. (1 mark)

Question 5 **[8 marks]**

An Oman shipping company analyzes the link between shipment weight (kg) and shipping charges.

Weight (kg)	Charge (OMR)
40	8.5
55	10
60	11.2
30	6.5
45	9

a. Determine the regression equation. (7 marks)

b. Predict the number of units sold when price is 6.5 OMR. (1 mark)

Formula sheet

Mean

$\bar{X} = \frac{\sum fX}{\sum f}$ (grouped data)

Median

$Median = l + \frac{\left(\frac{n}{2}\right) - cf}{f} \times h$ (grouped data)

Mode

$Mode = l + \frac{f_m - f_{m-1}}{2f_m - f_{m-1} - f_{m+1}} \times h$ (grouped data)

Quartile deviation

$QD = \frac{Q_3 - Q_1}{2}$

Mean deviation

$MD = \frac{\sum |X - \bar{X}|}{n}$ (ungrouped data)

$MD = \frac{\sum f|X - \bar{X}|}{n}$ (grouped data)

Sample Variance

$s^2 = \frac{\sum (X - \bar{X})^2}{n-1}$ **or** $s^2 = \frac{n\sum X^2 - (\sum X)^2}{n(n-1)}$ (ungrouped data)

$s^2 = \frac{\sum f(X - \bar{X})^2}{n-1}$ **or** $s^2 = \frac{n\sum fX^2 - (\sum fX)^2}{n(n-1)}$ (grouped data)

Sample Correlation coefficient

$r = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$

Regression equation formulas

Slope= $b = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2}$

Y-intercept = $a = \bar{Y} - b\bar{X}$ or $a = \frac{(\sum Y)(\sum X^2) - (\sum X)(\sum XY)}{n\sum X^2 - (\sum X)^2}$

$Y' = a + bX$

MLO & Bloom's Level of Complexity

Q #	MLO Addressed	Complexity Level	Mark	Remark
1	1 & 2	Understanding/ Application	6	Expect 90% to solve
2	1 & 2	Understanding/ Application	9	Expect 100% to solve
3	3 & 4	Analysis / Evaluate	10	Expect 90% to solve
4	2 & 3	Application / Analysis	7	Expect 80% to solve
5	2 & 4	Application / Evaluate	8	Expect 100% to solve

Reference:

Bluman, A.G. (2018) *Elementary Statistics: A Step by Step Approach*. 10th edn. New York: McGraw-Hill.