

The Open University of Sri Lanka  
 B.Sc/B.Ed. DEGREE, CONTINUING EDUCATION PROGRAMME  
 Open Book Test (OBT) 2023/2024  
 Level 05 - Applied Mathematics  
 ADU5301– Regression Analysis I



**Date: 22.12.2023**

**9.00 a.m. to 10.00 a.m.**

**Instructions**

- This examination is of **one-hour** duration.
- Answer **all** questions.
- Each of the two questions is allocated equal marks, distributed as indicated.
- Non programmable calculators are permitted.

1. a) Briefly describe two situations that the Pearson correlation coefficient cannot correctly measure the strength of the association between two variables.

(20 marks)

- b) A researcher recorded the total area examined (in square meters) and the dried weight of litter collected (in grams), at a site. Following summary statistics were calculated from a sample of 60 observations.

$$\sum x_i = 156, \sum y_i = 1427, \sum x_i^2 = 540, \sum y_i^2 = 44313, \sum x_i y_i = 4819.$$

- i) Calculate the Pearson correlation coefficient between the two variables.

(20 marks)

- ii) Suppose that the data satisfy the conditions that permit correct interpretation of the Pearson correlation coefficient. Based on the value you obtained in part (i), what can you say about the association between the two variables.

(10 marks)

