

The Open University of Sri Lanka
 B.Sc/B.Ed. DEGREE, CONTINUING EDUCATION PROGRAMME
 No Book Test (NBT) 2023/2024
 Level 05 - Applied Mathematics
 ADU5318 - Bio Statistics



Date: 09.02.2024

4.00 p.m. to 5.00 p.m.

Instructions

- This examination is of **one-hour** duration.
- Answer **all** questions.
- Each of the two questions is allocated equal marks, distributed as indicated. The total marks allocated is 200 and the earned marks will be converted to a mark out of 100.
- Non programmable calculators are permitted.

1. Reaction rates of a chemical reaction, measured to the nearest minute, are summarised in the following table.

Reaction time (minutes)	Number of samples
10 - 19	01
15 - 19	00
20 - 24	08
25 - 29	21
30 - 34	14
35 - 39	06

- i) What is the class width used to construct the given table?
(05 marks)
- ii) Find the cumulative frequency corresponding to the third class interval. Clearly explain what this value measures in relation to this study
(20 marks)
- iii) Calculate the first quartile.
(15 marks)
- iv) Calculate the inter-quartile range.
(25 marks)
- v) Calculate the range.
(10 marks)

vi) Out of the measures you calculated in parts (i) to (v), identify the ones that measure dispersion of the data.

(10 marks)

vii) If you were to recommend a measure among those stated in part (vi), which one would you recommend for the given data? Give reasons for your answer.

(15 marks)

2. Marks obtained for a statistics course by 200 students, classified according to whether the student take part in sports activities in the school (Group1) or not (Group2), are presented in the table below.

Marks obtained	Sports activity	
	Yes (Group1)	No (Group2)
00 - 19	8	12
20 - 39	12	44
40 - 59	15	55
60 - 79	14	34
80 - 99	01	05

i) Construct a suitable graph that can be used to compare the percentiles of the marks distributions of students in Group1 and Group2.

(30 marks)

ii) **Using the graph** you constructed, calculate the sample medians of marks of the two groups. Compare the sample median medians of marks of the two groups and clearly state your findings, in relation to this study.

(30 marks)

iii) Cut off marks for a pass grade in the said statistics course is 45. **Using the graph** you constructed, estimate the pass rates of the two groups.

(10 marks)

iv) If the cut off mark is lowered to 40, using the graph or otherwise, calculate the change in the pass rate of Group1

(10 marks)

v) If the teacher desires to have a minimum pass rate of 75%, regardless of engagement in sports activities, using the graph or otherwise calculate the appropriate cut-off mark that the teacher should use.

(20 marks)

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