

**Examination in School of Mathematical Sciences**  
**Semester 2, 2018**

**104843 STATS 2107 Statistical Modelling & Inference II**

Official Reading Time: 10 mins  
Writing Time: 120 mins  
Total Duration: 130 mins

**NUMBER OF QUESTIONS: 1      TOTAL MARKS: 12**

**Instructions**

- Attempt all questions.
- Begin each answer on a new page.
- Examination materials must not be removed from the examination room.

**Materials**

- 1 Blue book is provided.
- Calculators without remote communications capability are allowed.
- English and foreign-language dictionaries may be used.

**DO NOT COMMENCE WRITING UNTIL INSTRUCTED TO DO SO.**

1. Consider the data  $Y_1, Y_2, \dots, Y_n$  such that

$$Y_i \sim N(\mu, \sigma^2).$$

Let

$$\bar{Y} = \frac{1}{n} \sum_{i=1}^n Y_i.$$

- a. Show that

$$E[\bar{Y}] = \mu.$$

[3 marks]

- b. Consider the R code in Appendix A. Describe what it does.

[4 marks]

- c. Describe the scatterplot in Appendix B.

[5 marks]

[Total: 12]

Final total is 12

**Appendix A**

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## [1] -0.3394315
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**Appendix B**