

## **WARNING**

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Family Name					
Given Name/s					
Student Number					
Teaching Period	Semester 2, 2017				

<b>QAB105 – Quantitative Analysis for Business</b>	<b>DURATION</b>	
	Reading Time:	<b>10 minutes</b>
	Writing Time:	<b>180 minutes</b>
<b>INSTRUCTIONS TO CANDIDATES</b>		
<b>EXAM CONDITIONS</b>		
<p><u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.</p>		
This is a CLOSED BOOK examination		
Any non-programmable calculator is permitted		
No handwritten notes are permitted		
Any hard copy, unannotated English dictionary is permitted		
<b>ADDITIONAL AUTHORISED MATERIALS</b>	<b>EXAMINATION MATERIALS TO BE SUPPLIED</b>	
No additional printed material is permitted	1 x 16 Page Book 1 x Scrap Paper Formula Sheet/s Statistical Table/s	

**THIS EXAMINATION IS PRINTED  
DOUBLE-SIDED.**

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## Section A

### Multiple Choice Questions

Total No of Marks for this section: 10 marks

This section should be answered in the answer booklet provided.

*Marks for each question are indicated.*

*Suggested Time allocation for Section A: 30 minutes*

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## Section B

### Short Answer Questions

Total No of Marks for this section: 40

This section should also be answered in the Answer Booklet provided.

*Marks for each question are indicated.*

*Suggested Time allocation for Section B: 150 minutes*

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#### Question 1

The marked weights of free-range chickens at Coles are normally distributed with a mean weight of 3.2 kilograms (kg) and standard deviation of 0.4 kg. What proportion of chickens have marked weights greater than 3.6 kg?

(Marks: 5)

#### Question 2

Suppose that a new toy car is designed so that its lifetime (in months) is approximately normally distributed with mean 26 months and standard deviation 4 months.

- a. The manufacturer has decided to use a marketing strategy in which the car is covered by warranty for 18 months. Approximately, what proportion of the car will expire before the warranty expires?

(Marks: 5)

- b. Suppose that the manufacturer now decides to extend the warranty by 24 months. Approximately, what proportion of the car will expire before this new warranty expires?

(Marks: 5)

- c. What percent of the failures have occurred between the interval (18 months, 24 months)?

(Marks: 5)

### Question 3

- a. The mean of a sample of 15 measurements is 35.6. Suppose that the sample is enlarged to 16 measurements, by including one additional measurement having a value of 42. Find the mean of the sample of 16 measurements. (Marks: 1)
- b. Suppose that an analysis of a set of data reveals that  $Q_1 = 45$ ,  $Q_2 = 85$  and  $Q_3 = 105$ .
- (i) What does this statistics tell you about the shape of the distribution? (Marks: 1)
  - (ii) What can you say about the relative position of each of the observations 34, 84 and 104? (Marks: 1)
  - (iii) Calculate the interquartile range? (Marks: 1)
  - (iv) What does interquartile range tell you about the data? (Marks: 1)

### Question 4

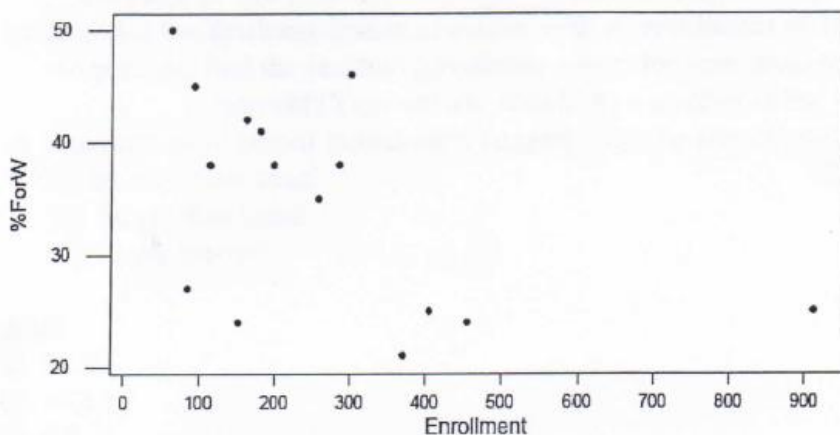
The scatterplot and the regression output below are for numbers of students enrolled in a variety of courses in a region's colleges and universities, and the percentages of students in those courses receiving F or W grades.

The regression equation is

$$\%ForW = 40.8 - 0.0231 \text{ Enrollment}$$

Predictor	Coef	SE Coef	T	P
Constant	40.801	3.541	11.52	0.000
Enrollme	-0.02307	0.01043	-2.21	0.045

S = 8.383      R-Sq = 27.4%      R-Sq(adj) = 21.8%



- (i) What is the correlation  $r$ ? (Marks: 2)
- (ii) What does the data suggest is the relationship between class size and grade? (Marks: 1)
- (iii) If the failure rate is the explanatory variable and enrolment is the response, what would happen to the regression line and why? (Marks: 4)
- (iv) Use the regression line to predict the failure rate for a business statistics course with an enrolment of 300 students. (Marks: 2)
- (v) If in fact the business statistics course with an enrolment of 300 students had a failure of 46 percent, find the residual (prediction error) for your prediction in part (iv). (Marks: 3)
- (vi) Comment on if this model can be used to make predictions. (Marks: 3)