Gratia Christian College
宏恩基督教學院

Academic Year 2016-2017
Semester 1
Examination

Course Code & Title	:	MM2214 Business Statistics
Time Allowed	:	2 hours
Student Name	:	_____
Student ID	:	_____

This paper has ___10___ pages (including this cover page).

1. This paper consists of 34 questions in 2 sections.

2. Answer **ALL** questions in both Section A and B.

3. Answers to Section A should be marked on the Multiple-Choice Answer Sheet while answers to Section B should be written in the Answer Book. In the Answer Book, start **EACH** question (not part of a question) on a **NEW** page.

This is a **closed-book** examination.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

(B) Short Questions: This section contains 4 (multi-part) short questions. Answer all questions. Please provide answers in the script book provided. The total mark for this section is 40 marks. Each question is worth 10 marks. Marks for each subsection of the questions are indicated on the exam paper.

Question 1 (10 marks)
A researcher has handed out a survey that asks eleven companies to report their marketing expenses and unit sold on a luxury product. These eleven companies return the survey and their scores are given in Table 1.

Table 1. Reported marketing expenses and unit sold.

Marketing Expenses (in thousand dollars)	Unit Sold
120	10
130	14
170	16
150	15
200	20
180	18
190	19
150	16
160	16
200	21
200	19

For the variable of marketing expenses ONLY:

a) Report the mean. (2 marks)

b) Report the median. (2 marks)

c) Report the mode. (1 mark)

d) Report the range. (1 mark)

e) Plot the scores of both Marketing Expenses and Unit Sold using a scatterplot. (3 marks)

f) Report the direction of the relationship between Marketing Expenses and Unit Sold. (1 mark)

Question 2 (10 marks)
In a course of Business Statistics, a set of examination grades is found as normally distributed, with a mean of 78 and a standard deviation of 9.
a) What is the probability that a student scored below 93 on this examination? (2 marks)
b) What is the probability that a student scored between 69 and 103? (3 marks)
c) The probability is five percent that a student taking the test scores higher than what grade? (2 marks)
d) If the professor grades on a curve (i.e., gives As to the top ten percent of the class, regardless of the score), are you better off with a grade of 87 on this exam or a grade of 72 on a different exam, where the mean is 64 and the standard deviation is 4? (3 marks)

Question 3 (10 marks)
A personnel manager was interested in the relationship between job satisfaction and depression. He conducted a survey measuring employees' level of job satisfaction and their level of depression. From the data, he calculated Pearson's product moment correlation coefficient (Pearson's r) to examine the relationship between the two variables. The SPSS output for his analysis is presented below:

Correlations

		job satisfaction	depression
job satisfaction	Pearson Correlation	1	-.530(*)
	Sig. (2-tailed)		.040
	N	170	170
depression	Pearson Correlation	-.530(*)	1
	Sig. (2-tailed)	.040	
	N	170	170

a) Write the null and alternative hypotheses for this analysis. (2 marks)

b) Using the information in the table, report: (4 marks)
   i) the direction of the relationship (1 mark)
   ii) the value of the correlation coefficient (1 mark)
   iii) the probability (p) value (1 mark)
   iv) whether the relationship is statistically significant (1 mark)

c) By using .05 as cut-off value, what would you conclude with respect to the null hypothesis? (1 mark)

d) Based on the results, the personnel manager argues that to reduce depression of the employees, he first needs to work on improving their job satisfaction. State (i)

what is wrong with this argument (1 mark), and (ii) provide a plausible alternative explanation for the finding – could there be another variable involved? (2 marks).

Question 4 (10 marks)

Design a study to test the theory that employees who work in a messy office are more likely to feel stressed.   In particular specify or describe:

(a) the null and alternative hypotheses (3 marks)

(b) the IV and DV – be specific (3 marks)

(c) the type of statistical analysis (2 marks) and

(d) other explanatory variables that would need to be considered when interpreting the results (2 marks).

- END OF EXAMINATION -