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## BERJAYA BUSINESS SCHOOL

### FINAL EXAMINATION

Student ID (in Figures) : 

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Student ID (in Words) : \_\_\_\_\_

Subject Code & Name : **BGN3301 STATISTICS FOR THE SERVICES INDUSTRY**  
Semester & Year : May - August 2016  
Lecturer/Examiner : Ms. Tey Sheik Kyin  
Duration : 3 Hours

### INSTRUCTIONS TO CANDIDATES

1. This question paper consists of 2 parts:  
PART A (20 marks) : TWO (2) short answer questions. Answers are to be written in the Answer Booklet provided.  
PART B (80 marks) : FOUR (4) structure- type questions. Answers are to be written in the Answer Booklet provided.
2. Candidates are not allowed to bring any unauthorized materials except writing equipment into the Examination Hall. Electronic dictionaries are strictly prohibited.
3. This question paper must be submitted along with all used and/or unused rough papers and/or graph paper (if any). Candidates are NOT allowed to take any examination materials out of the examination hall.
4. Only ballpoint pens are allowed to be used in answering the questions, with the exception of multiple-choice questions, where 2B pencils are to be used.

**WARNING:** The University Examination Board (UEB) of BERJAYA University College of Hospitality regards cheating as a most serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from BERJAYA University College of Hospitality.

**Total Number of pages = 6 (Including the cover page)**

**PART A : SHORT ANSWER QUESTIONS (20 MARKS)**

**INSTRUCTION** : **TWO (2)** short answer questions. Answer **ALL** questions in the Answer Booklet(s) provided.

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**Question 1**

In 2015, a university in the Midwestern United States surveyed its full-time first-year students after they completed their first semester. Surveys were electronically distributed to all 3,727 students, and responses were obtained from 2,821 students. Of the students surveyed, 90.1% indicated that they had studied with other students, and 57.1% indicated that they had tutored another student. The report also noted that 61.3% of the students surveyed came to class late at least once, and 45.8% admitted to being bored in class at least once.

- a. Describe the population of interest. (2 marks)
  - b. Describe the sample that was collected. (2 marks)
  - c. Describe a parameter of interest. (2 marks)
  - d. Describe the statistic used to estimate the parameter in (c ). (2 marks)
- [Total: 8 marks]**

## Question 2

Following data shows quality rating and meal price for 10 restaurants.

| Restaurant | Quality Rating | Meal Price (\$) |
|------------|----------------|-----------------|
| 1          | Good           | 18              |
| 2          | Very Good      | 22              |
| 3          | Good           | 28              |
| 4          | Excellent      | 38              |
| 5          | Very Good      | 33              |
| 6          | Good           | 28              |
| 7          | Very Good      | 19              |
| 8          | Very Good      | 11              |
| 9          | Very Good      | 23              |
| 10         | Good           | 13              |

- How many elements are in the data set?  
(1 marks)
  - How many variables are in the data set?  
(1 marks)
  - Which of the variables are categorical and which are quantitative?  
(2 marks)
  - Construct a frequency and relative frequency distributions for Quality Rating.  
( 3 marks)
  - Use a graphical technique to present the figures shown in part (d).  
(5 marks)
- [Total: 12 marks]**

**END OF PART A**

**PART B : STRUCTURE TYPE QUESTIONS (80 MARKS)**

**INSTRUCTION(S)** : **FOUR (4)** structure type questions. Answer **ALL** questions in the Answer Booklet(s) provided.

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**Question 1**

The following data shows the amount that a sample of 10 customers spent for lunch (\$) at a fast-food restaurant:

4.20 5.03 5.52 5.86 6.45 7.38 7.54 8.46 8.47 9.87

- a. Compute the mean, range and standard deviation. (6 marks)
  - b. Compute the interquartile range. (4 marks)
  - c. Draw the box plot. (3 marks)
  - d. Is the data skewed? If so, how? (3 marks)
  - e. Do the data contain outlier(s)? If yes, identify the outlier(s). Explain (4 marks)
- [Total: 20 marks]**

**Question 2**

- a. A box of ten gloves contains four left-handed gloves and six right-handed gloves.
  - i. If two gloves are randomly selected from the box, without replacement (the first glove is not returned to the box after it is selected), what is the probability that both gloves selected will be left-handed? (4 marks)
  - ii. If you were sampling with replacement (the first glove is returned to the box after it is selected), what is the probability that both gloves selected will be left-handed. (4 marks)

- b. The completion time for a certain task in a hotel has a normal distribution with mean,  $\mu = 27$  minutes and standard deviation,  $\sigma = 12$  minutes.
- Calculate the probability of getting the task completed within 20 to 30 minutes if one task was completed.  
(4 marks)
  - Calculate the probability of getting an average completion time greater than 20 minutes if twelve tasks were completed.  
(4 marks)
  - Calculate the probability of getting an average completion time between 25 and 30 minutes if 20 tasks were made.  
(4 marks)
- [Total: 20 marks]**

### Question 3

The marketing manager of a large supermarket chain has the business objective of using shelf space most efficiently. Toward that goal, she would like to use shelf space to predict the sales of pet food. Data is collected from a random sample of 12 equal-sized stores, with the following results:

| store | Shelf space (X)<br>(Feet) | Weekly Sales (Y)(\$) |
|-------|---------------------------|----------------------|
| 1     | 5                         | 160                  |
| 2     | 5                         | 220                  |
| 3     | 5                         | 140                  |
| 4     | 10                        | 190                  |
| 5     | 10                        | 240                  |
| 6     | 10                        | 260                  |
| 7     | 15                        | 230                  |
| 8     | 15                        | 270                  |
| 9     | 15                        | 280                  |
| 10    | 20                        | 260                  |
| 11    | 20                        | 290                  |
| 12    | 20                        | 310                  |

- Determine the sample regression line and interpret the coefficients  
(10 marks)
- Compute the coefficient of correlation and what do the statistics tell you about the relationship between shelf space and weekly sales?  
(5 marks)

- c. Determine the coefficient of determination,  $r^2$  and interpret its meaning

( 5 marks)

**[Total: 20 marks]**

#### **Question 4**

The quality-control manager at a light bulb factory needs to determine whether the mean life of a large shipment of light bulb is equal to 375 hours. The population standard deviation is 50 hours. A random sample of 64 light bulbs indicates a sample mean life of 360 hours.

- a. Identify the null hypothesis and alternative hypothesis.

(4 marks)

- b. At the 0.05 level of significance, is there evidence that the mean life is different from 375 hours?

(8 marks)

- c. Construct a 95% confidence interval estimate of the population mean life of the light bulbs.

( 8 marks)

**[Total: 20 marks]**

**END OF QUESTION PAPER**