BERJAYA BUSINESS SCHOOL

FINAL EXAMINATION

Student ID (in Figures)   :

Student ID (in Words)   :

Subject Code & Name	:	**BGN3301 STATISTIC FOR THE SERVICE INDUSTRY**
Semester & Year	:	January - April 2016
Lecturer/Examiner	:	Ms. Tey Sheik Kyin
Duration	:	3 Hours

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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.**

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.

Question 1

A manufacturer of computer chips claims that less than 10% of his products are defective. When 1000 chips are drawn from a large production, 7.5% were found to be defective.

a. What is the population of interest?

(2 marks)

b. What is the sample?

(2 marks)

c. What is the statistic?

(2 marks)

d. Does the value of 10% refer to the parameter or a statistic?

(2 marks)

e. Is the value 7.5% a parameter or a static?

(2 marks)

[Total: 10 marks]

Question 2

School	State	Campus Setting	Endowment ($ billions)	% Applicants Admitted	NCAA Division
Amherst College	Massachusetts	Town: Fringe	1.7	18	III
Duke	North Carolina	City: Midsize	5.9	21	I-A
Harvard University	Massachusetts	City: Midsize	34.6	9	I-AA
Swarthmore College	Pennsylvania	Suburb: Large	1.4	18	III
University of Pennsylvania	Pennsylvania	City: Large	6.6	18	I-AA
Williams College	Massachusetts	Town: Fringe	1.9	18	III
Yale University	Connecticut	City: Midsize	22.5	9	I-AA

From the table above,

a. How many elements are in the data set?

(1 marks)

b. How many variables are in the data set?

(1 marks)

c. Which of the variables are categorical and which are quantitative?

(5 marks)

d. For the campus setting, show the frequency and percent frequency for Town, Suburb and City.

(3 marks)
[Total: 10 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.

Question 1

a. According to an annual consumer spending survey, the average monthly Bank of America Visa credit card charge was $1838 (U.S. Magazine, December 2003). A sample of monthly credit card charges provides the following data.

236	1710	1351	825	7450
316	4135	1333	1584	387
991	3396	170	1428	1688

   i. Compute the mean and median

   (4 marks)

   ii. Compute the first and third quartiles.

   (4 marks)

   iii. Compute the variance and standard deviation.

   (4 marks)

   iv. Do the data contain outliers? If yes, identify the outlier. (Hint: using Box Plot)

   (3 marks)

b. Five observations taken for two variables follow.

x_i	4	6	11	3	16
y_i	50	50	40	60	30

   Compute and interpret the sample correlation coefficient. Intepret your answer(s).

   (5 marks)

   [Total: 20 marks]

Question 2

The following table showed the probability of the number of color televisions per household.

No. of color televisions	0	1	2	3	4	5
p(x)	0.012	0.319	0.374	0.191	0.076	0.028

a. Find the following probability.

i. $P(X=3)$

(3 marks)

ii. $P(X \geq 2)$

(3 marks)

b. Find the mean, variance, and standard deviation for the population of the number of color televisions per household.

(10 marks)
[Total: 16 marks]

Question 3

a. Consider an investment whose return is normally distributed with a mean of 10% and a standard deviation of 5 %.

i. Determine the probability of losing money.

(5 marks)

ii. Find the probability of losing money when the standard deviation is equal to 10%.

(5 marks)

b. The foreman of a bottling plant has observed that the amount of soda in each "32-ounce" bottle is actually normally distributed random variable, with a mean of 32.2 ounces and a standard deviation of 0.3 ounce.

i. If a customer buys one bottle, what is the probability that the bottle will contain more than 32 ounce?

(6 marks)

ii. If a customer buys a carton of four bottles, what is the probability that the mean amount of the four will be greater than 32 ounces

(6 marks)
[Total: 22 marks]

Question 4

a. The following observations are the ages of a random sample of 8 men in a bar. It is known that ages are normally distributed with a standard deviation of 10.

52   68   22   35   30   56   39   48

Determine the 95% confidence interval estimate of the population mean. Interpret the interval estimate

(8 marks)

b. Consider the following hypothesis test:

$H_0: \mu \leq 25$
$H_a: \mu > 25$

A sample of 40 provided a sample mean of 26.4. The population standard deviation is 6.

i.   Compute the value of the test statistic.

(4 marks)

ii. What is the p-value?

(3 marks)

iii. At α =0.01, what is your conclusion?

(3 marks)

iv. What is the rejection rule using the critical value? What is your conclusion?

(4 marks)

[Total: 22 marks]

END OF QUESTION PAPER