

FACULTY OF BUSINESS**FINAL EXAMINATION**Student ID (in Figures) :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Student ID (in Words) : _____
_____Subject Code & Name : **STA2114 BUSINESS STATISTICS**

Semester & Year : September – December 2023

Lecturer/Examiner : Suhada Binti Ishak

Duration : 3 Hours

INSTRUCTIONS TO CANDIDATES

- This question paper consists of 2 parts:**
PART A (30 marks) : THIRTY (30) multiple choice questions. Answer ALL questions. Please write your answers clearly in a SEPARATE sheet.
PART B (70 marks) : FOUR (4) problem solving questions. Answer ALL questions. Answers are to be written in the SEPARATE sheet.
- Candidates are not allowed to bring any unauthorized materials except writing equipment and scientific calculator into the Examination Hall. Electronic dictionaries are strictly prohibited.**
- 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.**
- 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 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 = 10 (Including the cover page)

PART B
INSTRUCTION(S)

: PROBLEM SOLVING QUESTIONS (70 MARKS)

: FOUR (4) problem solving questions. Answer **ALL** questions. Answers are to be written in the Answer Booklet provided.

Question 1

In a game called Taxation and Evasion, a player rolls a pair of dice. If on any turn the sum is 7, 11, or 12, the player gets audited. Otherwise, she avoids taxes. Suppose a player takes 5 turns at rolling the dice. Calculate the probability that:

- a. She does not get audited. (2 marks)
- b. She gets audited once. (2 marks)
- c. She gets audited more than 2 times (4 marks)
- d. What are the mean and standard deviation of the binomial distribution for the number of orders filled correctly?
(2 marks)

[Total: 10 marks]

Question 2

The manager of a paint supply store wants to determine whether the mean amount of paint contained in 1 gallon cans purchased from a nationally known manufacturer is actually 1 gallon. From the manufacturer's sample specifications, the standard deviation of the amount of paint is 0.03 gallon. 45 random sample of cans selected, and the mean amount of paint per 1 gallon can is 0.994.

- i. Identify the evidence that the mean amount is different from 1 gallon. (Use 0.01 level of significance).
(7 marks)
- ii. Determine the p-value and interpret its meaning.
(3 marks)

[Total: 10 marks]

Question 3

- a. Many companies use well-known celebrities as spokespersons in their TV advertisements. A study was conducted to determine whether brand awareness of female TV viewers and the gender of the spokesperson are independent. Each in a sample of 300 female TV viewers was asked to identify a product advertised by a celebrity spokesperson. The gender of the spokesperson and whether or not the viewer could identify the product was recorded. The numbers in each category are given below.

	Male Celebrity	Female Celebrity
Identified product	41	61
Could not identify	109	89

- a) Construct expected frequency table and calculate the value of the test statistic at 5% level of significance. Show all the working steps needed. (9 marks)
- b) Determine the conclusion for this test. (1 marks)
- b. To become an actuary, it is necessary to pass a series of 10 exams, including the most important one, an exam in probability and statistics. An insurance company wants to estimate the mean score on this exam for actuarial students who have enrolled in a special study program. They take a sample of 8 actuarial students in this program and determine that their scores are: 2, 5, 8, 8, 7, 6, 5, and 7. This sample will be used to calculate a 90% confidence interval for the mean score for actuarial students in the special study program.
- i. Determine the mean and the standard deviation of the sample. (4 marks)
- ii. Identify the critical value used in constructing a 90% confidence interval. (1 mark)
- iii. Compute a 90% confidence interval for the mean score of actuarial students in the special program. (5 marks)

[Total: 20 marks]

Question 4

The management of a chain electronic store would like to develop a model for predicting the weekly sales (in thousands of dollars) for individual stores based on the number of customers who made purchases. A random sample of 12 stores yields the following results:

Customers	Sales (Thousands of Dollars)
907	11.20
926	11.05
713	8.21
741	9.21
780	9.42
898	10.08
510	6.73
529	7.02
460	6.12
872	9.52
650	7.53
603	7.25

Table 1: Weekly Sales (in thousands of dollars) and Number of Customers Who Made Purchases.

- a. By using the graph paper, construct a scatter plot for the above dataset. (3 marks)
- b. Calculate the following values:
 - i. Mean value for X and Y.
 - ii. Standard deviation value for X and Y.
 - iii. Covariance, $COV(X, Y)$
 - iv. Coefficient of correlation, r .(15 marks)
- c. Compute least squares estimate of the slope and the least squares estimate of the Y-intercept. (10 marks)
- d. Predict the amount of sales (in \$1,000s) for individual stores based on 700 customers. (2 marks)

[Total: 30 marks]

END OF EXAM QUESTIONS