

FINAL EXAMINATION

Student ID (in Figures) :

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Student ID (in Words) : _____

Subject Code & Name : **STA2114 BUSINESS STATISTICS**
Trimester& Year : May – August 2023
Lecturer/Examiner : Suhada Binti Ishak
Duration : 3 Hours

INSTRUCTIONS TO CANDIDATES

1. 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.
2. Candidates are not allowed to bring any unauthorized materials except writing equipment and scientific calculator 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 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 = 11 (Including the cover page)

PART B : PROBLEM SOLVING QUESTIONS (70 MARKS)

INSTRUCTION(S) : FOUR (4) problem solving questions. Answer ALL questions. Answers are to be written in the SEPARATE SHEET.

Question 1

Suppose that history shows that 60% of college students prefer Brand C cola. A sample of 5 students is to be selected. Calculate the probabilities that:

- a. exactly 3 prefer brand C (2 marks)
- b. 2 or fewer prefer brand C (4 marks)
- c. What are the mean, variance and standard deviation of the binomial distribution for the students' preferred brand? (3 marks)

[Total: 10 marks]

Question 2

One of the biggest issues facing e-retailers is the ability to turn browsers into buyers. This is measured by the conversion rate, the percentage of browsers who buy something in their visit to a site. The conversion rate for a company's website was 10.1%. The website at the company was redesigned in an attempt to increase its conversion rates. A sample of 200 browsers at the redesigned site was selected. Suppose that 24 browsers made a purchase. The company officials would like to know if there is evidence of an increase in conversion rate at the 5% level of significance.

- a) State the null and alternative hypothesis for this study. (2 marks)
- b) State the critical value the company officials should use to determine the rejection region. (2 marks)
- c) Analyze whether the company can conclude that there is evidence of an increase in conversion rate at the 5% level of significance. (6 marks)

[Total: 10 marks]

Question 3

A study reported that 48% of 16-to 29 year olds, 42% of 30-to 49 year olds, 34% of 50-to 64 year olds preferred to use the social media as the medium of communication. Supposed that the study was based on a sample size of 200 respondents in each group.

- a. Construct the contingency table based on the information given. (4 marks)
- b. Compute the expected frequencies for each cell. (6 marks)
- c. Compute χ^2_{STAT} . Is there evidence of a significance difference among the age groups with respect to the proportion who preferred to use social media as the medium of communication? Use $\alpha = 0.05$. (10 marks)

[Total: 20 marks]

Question 4

A candy bar manufacturer is interested in trying to estimate how sales are influenced by the price of their product. To do this, the company randomly chooses 6 small cities and offers the candy bar at different prices. Using candy bar sales as the dependent variable, the company will conduct a simple linear regression on the data below:

City	Price (\$)	Sales
A	1.30	100
B	1.60	90
C	1.80	90
D	2.00	40
E	2.40	38
F	2.90	32

Table 1: Sales and Price of Candy Bar for Six Small Cities

- a. By using the graph paper, construct a scatter plot for the above data. (5 marks)
- b. Calculate the following values:
 - i. The coefficient of correlation, r , given standard deviation for x, $s_x = 0.5762$ and standard deviation for y, $s_y = 31.3624$ (12 marks)

- ii. Develop linear regression equation for the above data. (11 marks)
- iii. Estimated the predicted sales if the price of the candy bar is set at \$2. (2 marks)

[Total: 30 marks]

END OF QUESTIONS