

TEST 3 – Quantitative Method - **VERSION 1** (REAL DURATION: 3 Hours)

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Student Name _____

Student ID _____

HOW TO PROCEED DURING THE TEST.

Step 1 - You will retrieve this exam

Step 2 - You can either print or use a word document to complete your answers.

IF Print – You can take pictures of your pages and upload them. Circle your answers and Draw Scatterplots.

IF Digital Doc – Save your document as a PDF and upload the document. Write down each question number and its respective answers.

Title the documents with your first and last name. Example: Samie_Ly_V1

Important Notes:

- You can have access to your class notes and your own knowledge of the course including the course website provided to you.
- This exam must be completed on your own.
- Any signs of communication between classmates and/or plagiarism will result in a grade of 0 in your test and a plagiarism note from the college.
- Solutions must be submitted properly on Innovatank, in case of error only, please send it over via Mio immediately. A delay will result in a grade of 0.

There are 3 sections in this TEST 3
Section 1 – Multiple Choice Questions (MCQ)
Section 2 – Problem Solving Questions
Section 3 – Computer Lab # 3 Question (s)

Guidelines:

MCQ: If numerical, please provide your calculation. If the answer is correct but does not have calculation, you will only receive no marks to the allocated question. A full mark will consist of proper answer and calculations. If non- numerical, you **must** provide your reasoning and logic, if valid, the teacher can award partial marks.

Problem Solving: All questions must show calculations. If the question is answered only with a final answer and no explanation, a grade of 0 is allocated even if the answer is correct.

SECTION 1 – MULTIPLE CHOICE QUESTIONS (11 marks = 44%)

MCQ 1 – (2 marks) The tea and soup machine at the local subway station is supposed to fill cups with 6 ounces of soup. Ten cups of soup are bought with results of a mean of 5.5 ounces and a standard deviation of 0.18 ounces. How large a sample of soups would we need to be 95 percent confident that the sample mean is within 0.03 ounces of the population mean?

- A) 139
- B) 96
- C) 73
- D) 97
- E) None of the answers are correct.

MCQ 2 – (2 marks) The internal auditing staff of a local lawn-service company performs a sample audit each quarter to estimate the proportion of accounts that are delinquent (more than 90 days overdue). For this quarter, the auditing staff randomly selected 460 customer accounts and found that 120 of these accounts were delinquent. What is the 82 percent confidence interval for the proportion of all delinquent customer accounts at this company? Choose the closest value.

- A) .1671 to .2329
- B) .2430 to .2790
- C) .2336 to .2884
- D) .1714 to .2286
- E) None of the answers are correct.

MCQ 3 – (2 marks) In a study of factors affecting whether soldiers decide to reenlist, 400 subjects were measured for an index of satisfaction. The sample mean is 26 and the sample standard deviation is 7.5. Use the given sample data to construct the 98 percent confidence interval for the population mean for level of satisfaction.

- A) [28.75, 28.85]
- B) [25.88, 26.11]
- C) [27.85, 29.75]
- D) [11.82, 45.78]
- E) None of the answers are correct.

MCQ 4 – (1 mark) Which of the following is an advantage of a confidence interval estimate over a point estimate for a population parameter?

- A) Interval estimates are both more accurate and more precise than point estimates.
- B) Interval estimates are less accurate than point estimates.
- C) Interval estimates are more precise than point estimates.
- D) Interval estimates take into account the fact that the statistic being used to estimate the population parameter is a random variable.
- E) None of the answers are correct.

MCQ 5 – (2 marks) The internal auditing staff of a local manufacturing company performs a sample audit each quarter to estimate the proportion of accounts that are more than 90 days overdue (delinquent). The historical records of the company show that over the past 8 years, the average has been that 10 percent of the accounts have been delinquent. For this quarter, the auditing staff randomly selected 250 customer accounts. What is the probability that no more than 30 accounts will be classified as delinquent?

- A) 92.07%
- B) 40.15%
- C) 85.31%
- D) 42.07%
- E) None of the answers are correct.

MCQ 6 – (1 mark) In performing a chi-square test of independence, as the differences between respective observed and expected frequencies _____, the probability of concluding that the row variable is independent of the column variable increases.

- A) stay the same
- B) increases
- C) decreases
- D) double
- E) None of the answers are correct.

MCQ 7 – (1 mark) When someone is on trial for suspicion of committing a crime, the hypotheses are:

H_0 : innocent; H_A : guilty

- A) Type I error is acquitting a guilty person
- B) Type I error is convicting an innocent person
- C) None of the suggested answers are correct
- D) Type II error is convicting an innocent person
- E) Type II error is acquitting an innocent person.

SECTION 2 – PROBLEM SOLVING QUESTIONS

PS1 (8 marks = 32%) – As a business major, did you study foreign languages? If so, will your foreign language skills make you more marketable in the business community? To answer these questions, researchers mailed questionnaires to personnel directors of both foreign-based and domestic businesses. The 224 responses to the question of whether a firm would give hiring preference to business majors knowledgeable in foreign languages are summarized in the table:

	YES	NEUTRAL	NO
U.S. FIRMS	55	57	19
FOREIGN FIRMS	64	22	7

- a. Conduct an analysis to determine whether the percentages in the response categories for the question depend on the type of firm. Use a 10% level of significance. (6 marks)
- b. Construct a 90% confidence interval estimate for the percentage of U.S. firms that give hiring preferences to business majors with foreign language skills. (2 marks)

PS2 (4 marks = 16%) – A student claims that his high school is attended by students of above average intelligence. To test this claim, the standard IQ test is administered to 25 students selected at random. These students produced an average IQ score of 103. If previously published studies have standardized IQ scores at mean = 105 and standard deviation = 10, test this student's claim at a 2.5% level of significance. State the p-value?

SECTION 3 – COMPUTER LAB QUESTIONS (2 marks = 8%)

Based on your experience in computer lab 3 – describe your data collection procedure. What was the topic of your research, the type of analysis and how did you avoid committing human errors through out your research?