(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR
THIRD YEAR FIRST SEMESTER EXAMINATIONS

COURSE CODE: BCS 361
COURSE TITLE: DATA ANALYSIS TECHNIQUES

DATE: 19/12/2022   **TIME:** 08:00-10:00AM

INSTRUCTIONS TO CANDIDATES

1. Answer Question 1 (Compulsory) and ANY other two questions
2. Candidates are advised not to write on the question paper
3. Candidates must hand in their answer booklets to the invigilator while in the examination room

QUESTION ONE 30 MARKS (COMPULSORY)

a. Describe the steps for computing the following in SPSS   **9 Marks**
   - i. Frequencies
   - ii. Reliability Analysis
   - iii. Bivariate Correlations

b. A sample of randomly selected students at MMUST was asked to indicate the category that best described how often they accessed campus Wi-Fi. The following was filed:

Wi-Fi usage Pattern	Count
Never	30
Rarely	15
Occasionally	50
Often	110
Daily	120

   - i. Explain the possible data types for the two fields   **4 Marks**
   - ii. Outline the steps for the construction of a pie chart for the above in SPSS   **8 Marks**

c. During statistical analysis, a researcher gets the following results (outputs) for various tests: r = -0.05, r = 0.7, r = -0.85 and in another test, get p = 0.001, p = 0.65 and p = 0.048. Identify the type of test the researcher did and interpret each of the results.   **5 Marks**

d. Explain Univariate statistical analysis using example   **4 Marks**

QUESTION TWO 20 MARKS

a. Two groups of 5 patients have the following ages: Group A: 18, 24, 30, 36, 42, Group B: 18, 19, 20, 38, 55. Both groups have the same mean, 30. The standard deviations are 8.5 for Group A and 14.5 for Group B. Statistically, explain your understanding of the results.   **6 Marks**

b. Given the following research question, "Do the standardized math test scores differ between students that passed the exam and students that failed the final exam?" the researcher, seeks to analyze the collected data using a one way ANOVA.   **10 Marks**
   - i. Identify the independent and dependent variables
   - ii. Enumerate the two basic processes/steps you would undertake before doing the one way ANOVA

c. Explain how you would analyze your data using the one way ANOVA in SPSS.   **4 Marks**

QUESTION THREE 20 MARKS

a. After a survey study, a researcher purposes to use each of the following techniques to analyze different aspects of the data. Briefly explain each technique, the type of data on which they are applicable and the type of hypothesis.   **12 Marks**
   - i. One sample t-test
   - ii. Mann-Whitney test
   - iii. Two-sample t-test

iv.　Spearman's correlation coefficient
　b.　After data collection, a researcher seeks to analyze the data. Enumerate and explain, stating the importance of each of the three basic processes he has to undertake before performing the analysis.　　**8 Marks**

QUESTION FOUR 20 MARKS
　a.　A researcher does a survey study using questionnaires to collect quantitative data. He however does not understand statistical analysis process. Briefly explain clearly how you would guide or help this researcher analyze his data by choosing the right statistical techniques using SPSS.　　**10 Marks**
　b.　Data analysis is usually a cumulative activity that is preceded and succeeded by a series of other activities, which require good understanding of research techniques.
　　　i.　Define data analysis.　　**2 Marks**
　　　ii.　Briefly discuss any TWO activities that precedes and TWO activities that succeed data analysis.　　**8 Marks**

QUESTION FIVE 20 MARKS
　a.　Identify the key fields of application of Chi Square Test and briefly explain each　**5 Marks**
　b.　The Output of the Chi Square Test of Independence are shown below. Give your interpretation of each of the output table given.　　**15 Marks**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender Gender * Exam Exam	107	100.0%	0	.0%	107	100.0%

			Exam Exam		Total
			.00 Fail	1.00 Pass	
Gender Gender	0 Male	Count	22	10	32
		Expected Count	19.1	12.9	32.0
	1 Female	Count	42	33	75
		Expected Count	44.9	30.1	75.0
Total		Count	64	43	107
		Expected Count	64.0	43.0	107.0

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.517[a]	1	.218		
Continuity Correction[b]	1.033	1	.309		
Likelihood Ratio	1.546	1	.214		
Fisher's Exact Test				.283	.155
Linear-by-Linear Association	1.503	1	.220		
N of Valid Cases	107				