THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

MAY – JULY 2015 TRIMESTER

FACULTY OF COMMERCE

MBA REGULAR/EVENING PROGRAMME

CMS 511: BUSINESS DATA PROCESSING AND COMPUTER APPLICATION

Date: JULY 2015	**Duration: 3 Hours**
INSTRUCTIONS: Answer ANY FOUR Questions	

Q1. A researcher wants to learn more about the purchasing behaviour of University staff of different occupation ages, education level and gender. From a sample of 20 staff members, the researcher obtained the data shown in the table below:

Id	Gender	Education Level	Occupation	Age
1	F	Masters	Prof.	41
2	M	Bachelor	Lecturer	27
3	F	High School	Sales	20
4	N	Bachelor	Researcher	45
5	N	Masters	Executive	35
6	F	PhD	Prof.	50
7	M	High School	Clerical	25
8	M	Masters	Lecturer	38
9	M	Bachelor	Sales	28
10	F	Bachelor	Sales	52
11	F	Masters	Lecturer	27
12	M	PhD	Lecturer	55
13	M	High School	Secretary	19
14	M	Bachelor	Administrator	27
15	M	Masters	Lecturer	39
16	F	PhD	Prof	60
17	F	PhD	Lecturer	57
18	F	Masters	Administrator	40
19	M	Bachelor	Lecturer	35
20	M	Bachelor	Lecturer	

a) Prepare and enter the data set into SPSS. (**3 marks**)

b) Run the appropriate univariate analysis for the variables gender, education, occupation and age and report on the findings. (**4 marks**)

c) Establish whether there is a relationship between:
   i) Gender and education level. (**2.5 marks**)
   ii) Education level and occupation (**2.5 marks**)

d) Run an independent samples t-test to determine whether there is significance difference in mean age of the university staff based on gender at 0.05 level of significance. (**5.5 marks**)

Q2. A study was conducted to determine whether there is a relationship between a person's height and how well they perform in long jump. A sample of 40 students was used for the study. The researcher measured the heights and the corresponding long jump performance of each student, analyzed the data and obtained the following results:

		Height	Jump – dist
Height	Pearson correlation	1	0.98
	Sig. (2 – tailed)		0.000
	N	40	40
Jump – dist	Pearson correlation	0.98	1
	Sig. (2 – tailed)	0.000	
	N	40	40

a) State the null and alternative hypotheses. (**2 marks**)

b) Based on the results given above, state the sample size of this study and describe the relationship established between the height and long jump distance of the students. (**4 marks**)

c) Given 5% level of significance, is there a significant relationship between height and long jump? Support your answer. (**4 marks**)

d) Write a report, using APA style, of the statistical test results displayed above. (**4 marks**)

e) Distinguish between Pearson's correlation coefficient and Spearman's Rank Order correlation of a study. (**3.5 marks**)

Q3. a) Explain the principles of hypothesis testing in a study. **(4 marks)**

b) For each of the following scenarios, indicate which type of statistical error could have been committed or, alternatively, that no statistical error was made. When warranted, provide a definition for the indicated statistical error.

i) Unknown to the statistical analyst, the null hypothesis is actually true.

ii) The statistical analyst fails to reject the null hypothesis.

iii) The statistical analyst rejects the null hypothesis.

iv) Unknown to the statistical analyst, the null hypothesis is actually true and the analyst fails to reject the null hypothesis.

v) Unknown to the statistical analyst, the null hypothesis actually false.

vi) Unknown to the statistical analyst, the null hypothesis is actually false and the analyst rejects the null hypothesis. **(6 marks)**

Q4. A catalogue shop sells 9 brands of TV sets with 14 inch screens. The price and the number of TV sets sold are given as:

	Turnover	**Staff**
1	7500	48
2	800	31
3	8500	39
4	10000	28
5	10000	24
6	12000	17
7	14000	11
8	20000	6
9	22000	2

a) Which of the two variables is independent? **(2 marks)**

b) Draw a scatterplot to represent these sets of relationship between the two variables. **(5 marks)**

c) Conduct correlational analysis and comment on the results. **(6 marks)**

d) Conduct regressional analysis and comment on the results. **(6 marks)**

e) Which of the two analysis (correlational and regressional) is appropriate for the given data and why? **(5 marks)**

Q5. a) Explain in details why it is necessary to study statistics. **(5 marks)**

b) Describe the main aspects of a study to consider when deciding on the particular descriptive or inferential statistics that you should use in a study. **(6 marks)**

c) Explain briefly each of these concepts:
   i) Population and sample.
   ii) Descriptive and inferential statistics
   iii) Parametric and non-parametric statistics
   iv) Nominal and ordinal variables **(8 marks)**
   v)

Q6. A salesman for a car brand is interested in determining whether there is a relationship between one's income level and the price of the car they buy. This information is intended to assist in known which car brands to offer potential customers in new markets with known average incomes. After analysis, the following results were obtained.

Model summary

Model	R	R-square	Adjusted R square	Std. Error of the estimate
1	.923[a]	.947	.930	974.668

a.Predictors: (constant) income

Anova[b]

Model	Sum of squares	dy	Mean square	F	Sig.
Regression	4.123E7	1	4.123E7	46.676	.000[a]
Residual	2.367E7	12	943524.484		
Total	6.490E7	13			

a.Predictors: (constant) income
b.Dependent variable price

Coefficients[a]

Model	Unstandardized coefficients		Standardized coefficients		
	B	Std. Error	Beta	t	Sig.
1.(constant)	9283.962	1241.369		6.232	.000
Income	.436	.081	.973	9.638	.000

a.Dependent variable: price

a) State the null and alternative hypotheses for this study. **(2 marks)**

b) Using the results given above, complete the regression equation determine the price of a car given an income of Ksh. 13,000. **(4 marks)**

c) Given a significance level of 5%, determine whether a person's income is a good predictor of the price of a car. **(4 marks)**

d) Write a brief report using APA style of the statistical test results obtained by the salesman. **(3.5 marks)**

e) What are the main assumptions of a researcher must consider when conducting a linear regression analysis?

END