

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF EDUCATION, HUMANITIES AND SOCIAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF MASTER OF EDUCATION
(CURRICULUM STUDIES/PEDAGOGY)

1ST YEAR 1ST SEMESTER 2022/2023 ACADEMIC YEAR

REGULAR PROGRAMME

MAIN CAMPUS

COURSE CODE: ECT 804

COURSE TITLE: COMPUTER APPLICATIONS IN RESEARCH

DATE: 19/12/2022

SESSION: 9.00-12.00NOON

TIME: 3 HOURS

INSTRUCTIONS

1. Answer any THREE 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

- (a) What are the uses of descriptive statistics in data analysis using SPSS programme? (3 marks)
- (b) What assumptions are common to all techniques used to explore relationships among variables? (5 marks)
- (c) Describe a research scenario that would require exploration of relationships among variables and explain whether or not you would apply Pearson’s r or Spearman’s rho and give reasons for this decision. (5 marks)
- (d) Describe how you can use SPSS to check the reliability of a scale (7 marks)

QUESTION TWO

A researcher collected data from four schools in two counties concerning the perception of the students about some aspects of their school. The schools were St. Anne, St. John, St. Peter and St. Mary and the counties were Kisumu and Kericho. The questionnaire for data collection is shown below:-

Students’ questionnaire

- 1. County
- 2. School
- 3. Gender
- 4. Age
- 5. Indicate your level of agreement with the statements after the key below concerning perception of the school

KEY

- 1 = Strongly disagree
- 2 = Disagree
- 3 = Undecided
- 4 = Agree
- 5 = Strongly Agree

(a) My school is the best	1	2	3	4	5
(b) We have the best diet	1	2	3	4	5
(c) We are a disciplined school	1	2	3	4	5
(d) Our school meets all Covid-19 protocols	1	2	3	4	5
(e) Our school is well equipped	1	2	3	4	5
(f) Our school is adequately staffed	1	2	3	4	5
(g) We have a good relationship with community	1	2	3	4	5
(h) We perform better than other schools	1	2	3	4	5

- (i) Primary school pupils prefer our school 1 2 3 4 5

Use the above questionnaire to answer the questions that follow:-

- (i) Prepare a code book for the data collected. (14 marks)
- (ii) From the questionnaire which data items will give you data measured on the:
- Ratio scale. (2 marks)
 - Nominal scale (2 marks)
 - Ordinal scale (2 marks)

QUESTION THREE

- (a) Describe the characteristics of data that would warrant application parametric tests (4 marks)

- (b) A researcher wanted to explore whether there was a significant difference between the total optimism score on the optimism scale across three age groups. While analyzing the data by conducting an ANOVA test using SPSS, the researcher obtained the output shown in tables below. Use the output tables to answer the questions that follow.

Output from a one-way between groups ANOVA

Oneway

Descriptive

Total Optimism

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
					1 18-29	147		
2 30-44	153	22.10	4.147	335	21.44	22.77	10	30
3 45+	135	22.96	4.485	386	22.19	23.72	8	30
Total	435	22.12	4.429	212	21.70	22.53	7	30

Test of Homogeneity of variance

Total Optimism

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Statistic	df1	df2	Sig.
746	2	432	.024

ANOVA

Total Optimism

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	179.089	2	89.535	4.641	.010
Within Groups	833.951	432	19.292		
Total	8513.021	434			

Robust Tests Of Equality Of Means

Total Optimism

	Statistic	df1	df2	Sig.
Welch	4.380	2	284.508	.013
Brown-Forsythe	4.623	2	423.601	.010

Multiple Comparisons

Dependent Variable: Total Optimism

Tukey HSD

(I)Age.3 groups	(J)age 3 groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 18-29	2 30-44	-.744	.507	.308	-1.94	.45
	3 45+	-1.595*	.524	.007	-2.83	-.36
2 30-44	1 18-29	-.744	.507	.308	-.45	1.94
	3 45+	-.851	.519	.230	-2.07	.37
3 45+	1 18-29	1.595*	.524	.007	.36	2.83
	2 30-44	.851	.519	.230	-.37	2.07

44					
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* The mean difference is significant at the 0.05 level

- (i) What is the importance of the multiple comparisons table in the output?
(4 marks)
- (ii) By giving reasons, explain whether or not the assumption of homogeneity of variances was violated.
(2 marks)
- (iii) By giving reasons, explain whether or not there was a significant difference between the groups.
(4 marks)
- (c) Describe the procedure for conducting a one-way between groups ANOVA with post-hoc tests.
(6 marks)

QUESTION FOUR

A researcher conducted a research to explore sex differences in self-esteem scores and obtained the output as shown in the tables below. Use the output tables to answer the questions that follow:-

The output generated from this procedure is shown below

Group Statistics

SEX	N	Mean	Std. Deviation	Std. Error Mean
Total self esteem	MALES	484	34.02	4.91
	FEMALES	352	33.17	5.71

Independent samples t-test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Total self esteem	Equal variances assumed	3.505	.062	1.622	434	.105	85	52	18	1.87
	Equal variances not assumed			1.661	422.349	.098	85	51	18	1.85

- (a) What is the total number of people who participated in the study? (2 marks)
- (b) Explain the circumstances under which a researcher would use the first or second row of the independent samples t-test table (4 marks)

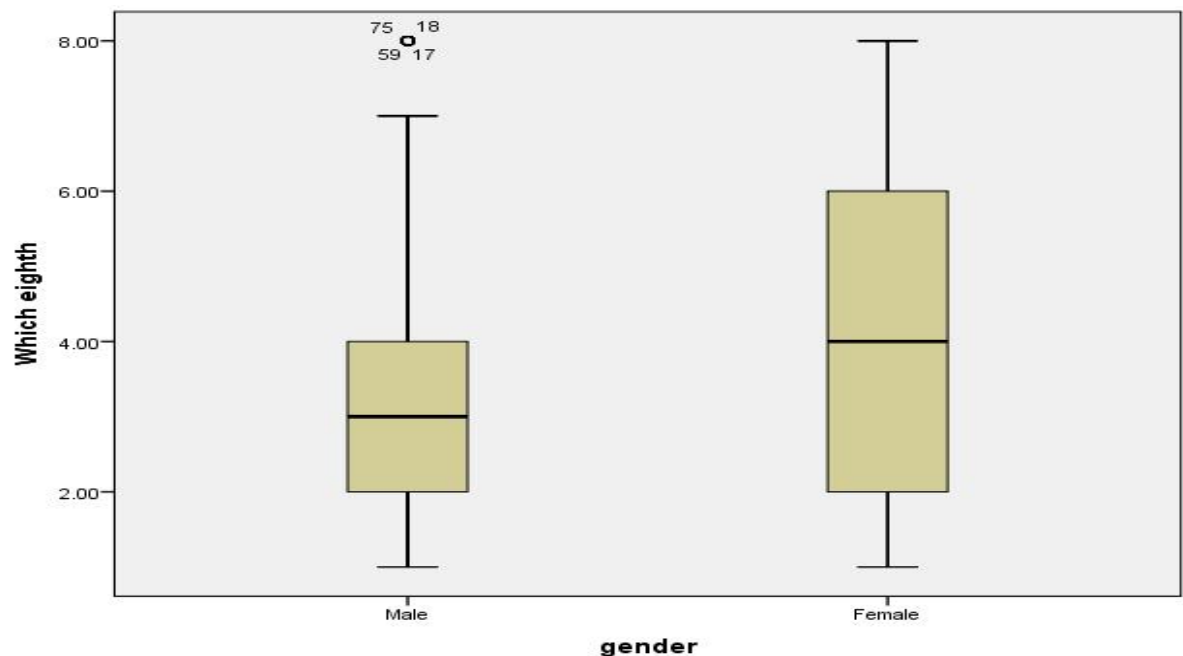
- (c) State whether there was a significant difference between the means for males and females and give reasons why you think so? (4 marks)
- (d) What are the conditions for conducting independent samples t-test? (4 marks)
- (e) Explain how one can find and correct errors in a data file? (6 marks)

QUESTION FIVE

- a. Explain how you can start an SPSS programme (3 marks)
- b. How would you use the drop-down menus in SPSS to generate a frequency table? (4 marks)
- c. In which sub-dialog box can the Chi Square test be found? (2 marks)
- d. To generate a Spearman's ρ test, which set of instructions should you give SPSS? (4 marks)

- e. Below is a boxplot from SPSS data analysis output. Use it to answer the questions that follow.

Example of Boxplot



- i. What are the functions of boxplots in data analysis? (2 marks)
- ii. What is the significance of the following parts of the boxplot?

- The box (1 mark)
- The lines across the inside of the box (1 mark)
- The whiskers protruding from the box to the opposite extremes (1 mark)
- The circle with numbers on one extreme of the whisker of the box plot for males. (2 marks)