JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF EDUCATION

UNIVERSITY EXAMINATION FOR THE DEGREE OF MASTER OF EDUCATION (SPECIAL NEEDS EDUCATION)

1ST YEAR 1ST SEMESTER 2016/2017 ACADEMIC YEAR

SCHOOL BASED MAIN CAMPUS

COURSE CODE: **EDU 803**

COURSE TITLE: **COMPUTER APPLICATION IN RESEARCH**

EXAM VENUE: STREAM:

DATE: **EXAM SESSION: 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**.

1. a. What do you understand by the following as used in SPSS

   i. Codebook? (2 marks)
   ii. Viewer window (2 marks)
   iii. Data editor window (2 marks)

   b. Distinguish between

   i. Descriptive statistics and inferential statistics (2 marks)
   ii. Continuous variables and discontinuous variables (2 marks)

   c. A researcher conducted a test to find out whether or not the data collected during the research was normally distributed. Part of the SPSS output is shown in the tables below.

Part of the output generated by SPSS from the test of normality procedure is shown below

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Which eighth	999	100.0%	0	0.0%	999	100.0%

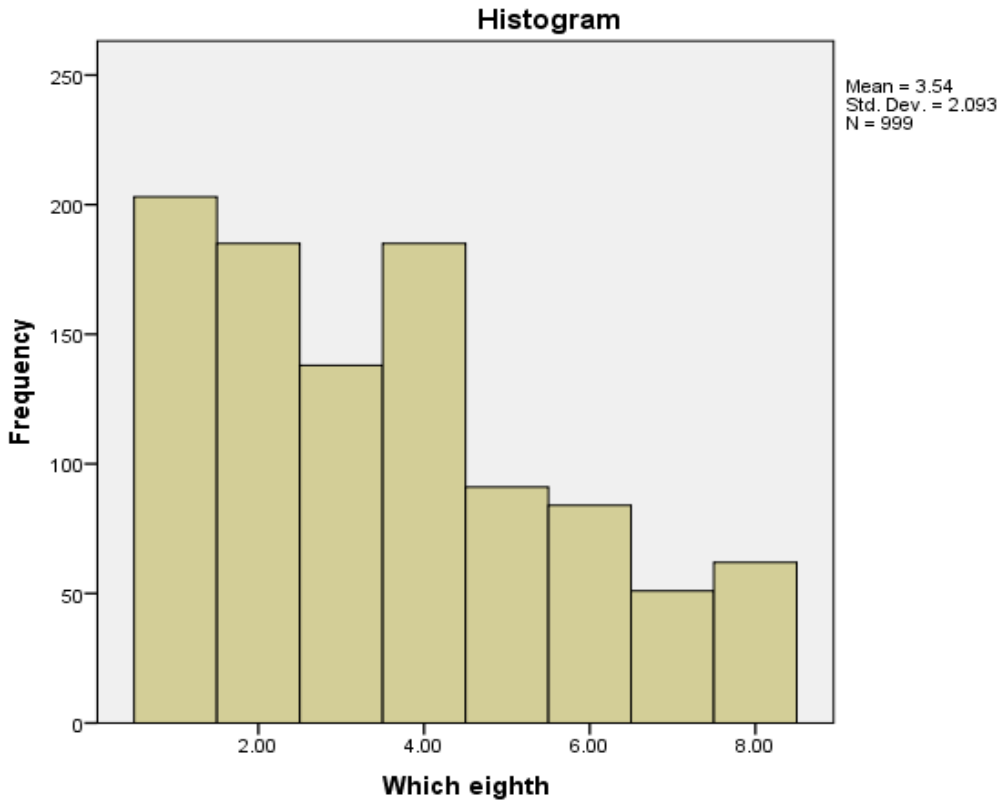
Descriptive

			Statistic	Std. Error
Which eighth	Mean		3.5425	.06624
	95% Confidence Interval for Mean	Lower Bound	3.4126	
		Upper Bound	3.6725	
	5% Trimmed Mean		3.4362	
	Median		3.0000	
	Variance		4.383	
	Std. Deviation		2.09349	
	Minimum		1.00	
	Maximum		8.00	
	Range		7.00	
	Interquartile Range		3.00	
	Skewness		.559	.077
	Kurtosis		-.659	.155

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Which eighth	.158	999	.000	.911	999	.000

a. Lilliefors Significance Correction



i. How is the 5% trimmed mean value in the Descriptive table above obtained? (2 marks)

ii. Describe the significance of the 5% trimmed mean value in the Descriptive table above. (3 marks)

iii. Using the SPSS output shown above, how would you tell whether or not the data is normally distributed? (5 marks)

2. (a) A researcher wanted to find out whether there is a significant difference between the total optimism score on the optimism scale across three age groups. On analyzing the data by conducting an ANOVA test using SPSS, the researcher obtained the output shown in the 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	21.36	4.551	375	20.62	22.10	7	30
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

Levene Statistic	df1	df2	Sig.
746	2	432	.475

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

* The mean difference is significant at the 0.05 level

(a) What was the total number of individuals that were studied? (1 mk)

(b) Describe the role of the tables titled

i. ***Test of Homogeneity of variance*** (2 marks

ii. *Descriptives* (2 marks)

iii. *ANOVA* (2 marks)

iv. *Multiple comparisons* (2 marks)

(iii) With a reason, state whether there is a significant difference between the groups. (3 mks)

c. i. What is the importance of calculating effect size in statistical tests. (2 marks)

i. Give two examples of effect size tests (2 marks)

(d) Describe the procedure the researcher could have used to assess whether the variables in this study were normally distributed or not. (4 marks)

3. A researcher collected data from four schools in two sub-counties concerning the perception of the students about some aspects of their teachers. The schools were St Peters, St John, St Joseph and St Mark and the sub-counties were Kisumu and Siaya. The questionnaire for data collection is shown below:-

Students' questionnaire

1. Gender ……
2. Age ……
3. Indicate your level of agreement with the statements using the key below

KEY

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

(a)	Our teachers are well educated	1	2	3	4	5
(b)	Our teachers are always prepared for lessons	1	2	3	4	5
(c)	Our teachers are well groomed	1	2	3	4	5
(d)	Our teachers are disciplined	1	2	3	4	5
(e)	Our teachers love their work	1	2	3	4	5

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

(i) Prepare a codebook for the data collected. (9 mks)

(ii) From the questionnaire which data items will give you:-

- Nominal data (2 mks):
- Interval data (2 mks)
- Ordinal data (2 mks)

(iii)Outline the rules for naming variables. (5 mks)

4. (a) What are the conditions for conducting independent samples t-test? (4 mks)
b. 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

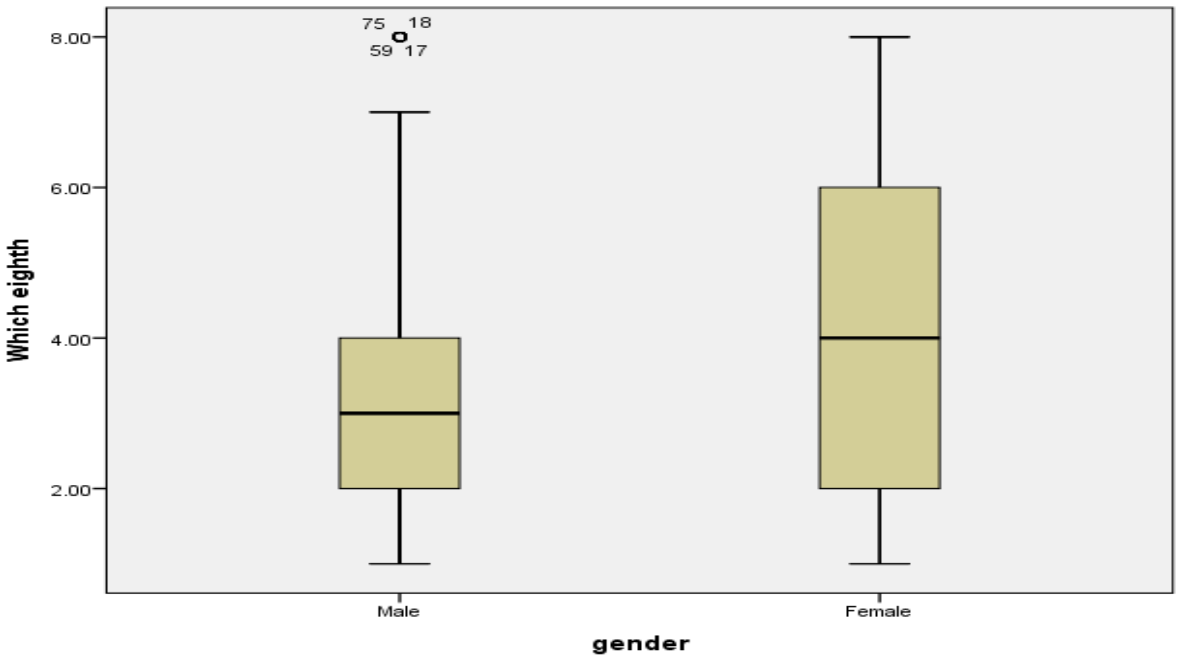
SEX		N	Mean	Std. Deviation	Std. Error Mean
Total self esteem	MALES	484	34.02	4.91	36
	FEMALES	352	33.17	5.71	36

Independent samples t-test

	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) How many males and females participated in the study?
(i) Males (1 mk)
(ii) Females (1 mk)
(b) What was the P value for the t-test? (2 mks)
(c) State whether there was a significant difference between the means for males and females and why you think so? (3 mks)
(d) Describe the role of the information in the output table titled *Independent samples t-test* (9 marks)

5. (a) Distinguish between
(i) Data view and variable view in the data editor window of SPSS. (2 mks)
(ii) Warm booting and cold booting of a computer (2 mks)
b. What is the importance of graphs in statistical tests (2 marks)
c. Below is an example of a box plot graph. Use it to answer the questions that follow.



i. How does the box plot help a researcher (3 marks)

ii. What is the significance of the
- Length of the box? (2 marks):
- The lines across the inside of the box (2 marks)
- The numbers that appear around the little circle in the first box plot (2 marks)

d. Describe the process of creating a data file and entering data? (5 mks)