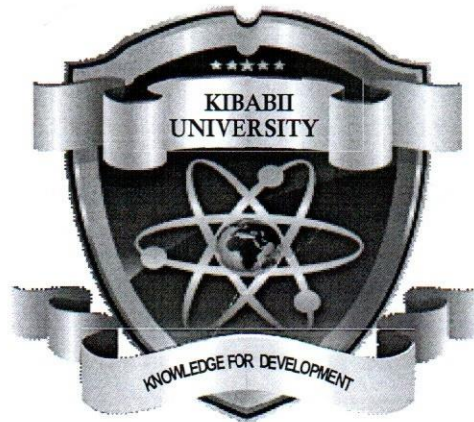


KIBABII UNIVERSITY

15



UNIVERSITY EXAMINATIONS

MAIN EXAMS

2017/2018 ACADEMIC YEAR

FIRST YEAR FIRST SEMESTER

FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION

COURSE CODE: MBA 804

COURSE TITLE: QUANTATIVE ANALYSIS

DATE: 1/8/2018 TIME: 9.00 am

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INSTRUCTIONS TO CANDIDATES

Answer ANY THREE QUESTIONS

✓

**QUESTION ONE( 20 Marks)**

Background information

- One of the ability tests was called the Clerical Speed and Accuracy test
- Each Question involved selecting a two-letter pair out of five two-letter pairs that corresponded to the two-letter pair in the question booklet
- The test was timed and split into two halves consisting of 100 questions each and lasting 3 minutes each

Research Questions

- ❖ Was average performance in the first part different to performance in the second part?
- ❖ Was performance in the first part related to performance in the second part?
- i) What are the variables in this study?
- ii) Are the variables nominal, ordinal, interval or ratio scales?
- iii) Which two statistical procedure could we use to test the two research questions?
- iv) What are the null hypotheses for the two research questions?
- v) What kind of reliability measure is research question 2?
- vi) What are your expectations?

The following was SPSS Repeated measures t-test output of this study

**Paired Samples Statistics**

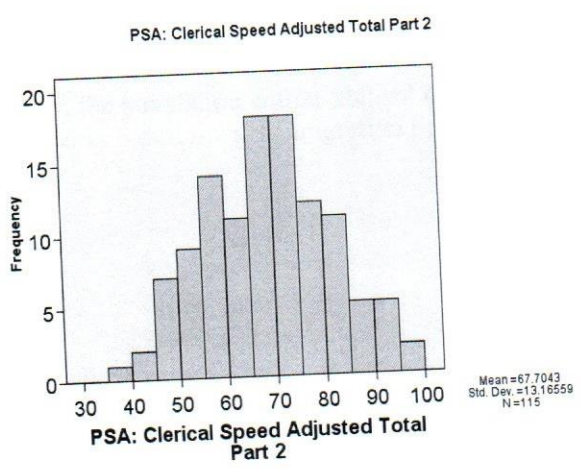
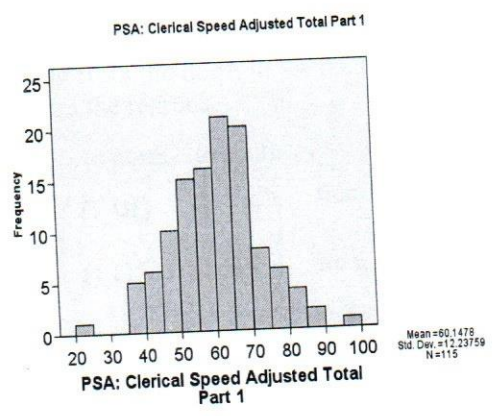
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PSA: Clerical Speed Adjusted Total Part 1	60.1478	115	12.23759	1.14116
	PSA: Clerical Speed Adjusted Total Part 2	67.7043	115	13.16559	1.22770

**Paired Samples Test**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PSA: Clerical Speed Adjusted Total Part 1 - PSA: Clerical Speed Adjusted Total Part 2	-7.557	6.22557	.58054	-8.70656	-6.40648	-13.02	114	.000

- a) What is the difference between the two means?
- b) What is the Cohen's d of the difference taking the part 1 standard deviation?
- c) Which part did people do better on? Was the difference small, medium or large?
- d) Was the observed difference statistically significant? Write it out.
- e) What's the answer to the research question?
- f) How might you explain such a difference?
- g) What would have happened if we had computed a difference score between their part 1 and part 2 score for each individual and performed a one-sample t-test on this difference score?
- h) If we did adopt this approach of doing a one sample t-test on the difference score, what would be the population mean that we would test our sample mean against?

The following were SPSS Correlation Assumption Testing output



1. What are the two assumptions of correlation required in order to obtain accurate p-values for the significance test?
2. In the histogram, does performance on the two variables look normally distributed?
3. What is skewness / se skew for the two variables and does? Is it larger than 3 for either variable?

Statistics

		PSA: Clerical Speed Adjusted Total Part 2	PSA: Clerical Speed Adjusted Total Part 1
N	Valid	115	115
	Missing	1	1
Skewness		.075	.043
Std. Error of Skewness		.226	.226
Kurtosis		-.368	.775
Std. Error of Kurtosis		.447	.447

**QUESTION TWO(20 Marks)**

(a) Because of increasing cost increasing cost energy, the population within Maueni district seem to be shifting from the north to the south the transition matrix S describes the migration behaviour observed between the regions.

$$S = \begin{matrix} & \begin{matrix} \text{to north} & \text{to south} \end{matrix} \\ \begin{matrix} \text{from north} \\ \text{from south} \end{matrix} & \begin{pmatrix} 0.90 & 0.10 \\ 0.05 & 0.95 \end{pmatrix} \end{matrix}$$

determine whether the populations will attain an equilibrium condition and if so, the population of the two regions.

(b) Matrix N below shows the number of items of type A, B, and C in warehouses Y and W. Matrix p shows the cost in pence per day of storing (S) and maintaining (M) one item each of A, B and C

$$N = \begin{matrix} & \begin{matrix} A & B & C \end{matrix} \\ \begin{matrix} Y \\ W \end{matrix} & \begin{pmatrix} 10 & 12 & 50 \\ 60 & 0 & 20 \end{pmatrix} \end{matrix}$$

$$P = \begin{matrix} & \begin{matrix} S & M \end{matrix} \\ \begin{matrix} A \\ B \\ C \end{matrix} & \begin{pmatrix} 2 & 0.5 \\ 3 & 1.5 \\ 2 & 0.5 \end{pmatrix} \end{matrix}$$

- i) Evaluate the matrix (N×P) and say what it represents.
- ii) Stock movement occurs as follows:  
At the start of the day 1:

Withdrawal of 2 type B from warehouse Y, 20 of type A from warehouse W.

At the start of day 2:

Delivery of 7 type B and 10 of type C to warehouse Y and 15 of type B to warehouse W.

Evaluate the total cost of storage and maintenance for days 1 and 2.

- iii) Write down without evaluating a matrix expression which could be used to evaluate the storage and maintenance cost of items A, B and C for the period from day 1 to 4. Allow for the stock movements on days 1 and 2, as described in part (b). There were no stock movements on days 3 and 4.

### QUESTION THREE( 20 marks)

Describe how quadratic equations can be used in decision making. (3 mks)

The demand for a commodity is given by  $p = 400 - q$ . The average total cost of producing the commodity is given by

$$ATC = \frac{1000}{q} + 100 - 5q + q^2$$

where  $p$  is the price in shillings and  $q$  is the quantity in kilograms.

#### Required

What does  $\frac{1000}{q}$  in the ATC equation represent economically? (1 mark)

Determine the output that leads to maximum profit and the profit at the level of output. (9 marks)

Alpha industries sells two products, X and Y, in related markets, with demand functions given by:

$$P_x - 13 + 2X + Y = 0$$

$$P_y - 13 + X + 2Y = 0$$

The total cost, in shillings, is given by:

$$TC = X + Y$$

#### Required:

Determine the price and the output for each good which will maximize profits. (7 marks)

### QUESTION FOUR (20 Marks)

An insurance company takes a keen interest in the age at which a person is insured. Consequently a survey conducted on prospective clients indicated that for clients having the same age the probability that they will be alive in 30 years time is  $\frac{2}{3}$ . This probability was established using the actuarial tables. If a sample of 5 people was insured now, find the probability of having the following possible outcomes in 30 years

- All are alive
- At least 3 are alive
- At most one is alive

- d) None is alive
- e) At least 1 is alive

**QUESTION FIVE(20 Marks)**

A project has the following activities and costs. You are required to prepare the least cost schedules for all possible durations from *normal time – normal cost* to *crash time – crash cost*.

Activity	Preceding Activity	Duration days	Crash time	Cost (Shs).	Crash cost	Cost slope
A	-	4	3	360	420	60
B	-	8	5	300	510	70
C	A	5	3	170	270	50
D	A	9	7	220	300	40
E	B,C	5	3	200	360	80