



"Investing in Africa's Future"

COLLEGE OF BUSINESS PEACE LEADERSHIP AND GOVERNANCE

**MBA 503-1: QUANTITATIVE METHODS
END OF SECOND SEMESTER EXAMINATIONS**

APRIL/MAY 2017

LECTURER: (P TARAMBAWAMWE)

DURATION: (3 HRS)

INSTRUCTIONS

Answer ALL Questions

MARKS FOR EACH QUESTION ARE SHOWN AT THE END OF EACH QUESTION

Q1 Data can be presented in various ways. This include tables, graphs, statistics and mathematical models. [25 marks]

- i. Discuss when you could use a simple bar graph, stacked bar graph, comparative bar graph and a histogram as forms of data presentation.
- ii. What are the differences between a bar graph and a histogram
- iii. When do you use a cross table or a scatter plot as forms of data presentation. Explain

Q2 a. Explain the following terms. [7 marks]

- i. Parameter
- ii. Nominal level
- iii. Discrete data
- iv. Data

b. The following data are the temperature of effluent at discharge from a sewage treatment facility on 24 consecutive days. Show this in a simple frequency table [10 marks]

43	47	51	48	52	50	46	49	45	52	46	51
44	49	46	51	49	45	44	50	48	50	49	50

c. State whether the following statements are **TRUE** or **FALSE**. Give a reason for your answer.

- (i) If the median mass of 5 people in a lift is 70 kg and a 65 kg man enters, then the median will decrease. [2 marks]
- (ii) The mean is said to be affected by extremely large or small values (i.e. outliers). Then it can also be said that the standard deviation is also affected by outliers. [2 marks]
- (iii) The sample correlation coefficient has the same sign as the slope of the least squares line relating y and x. [2 marks]

d. i. The science test grades are posted. The class did very well. All students taking the test scored over 75. Unfortunately, 4 students were absent for the test and the computer listed their scores as 0 until the test is taken. Assuming that no score repeated more times than the 0's, what measure of central tendency would most likely give the best representation of this data? [2 marks]

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Q3 The Association of Accountants is investigating the relationship between performance in Quantitative Methods and hours studied per week and the general level of intelligence of the candidates. The Association has data on seven students which are

Student	Hours(x1)	I.Q(x2)	Exam grade(y)
1	9	99	56
2	6	100	45
3	12	119	80
4	14	95	73
5	11	110	71
6	6	117	55
7	19	98	95

The data was analyzed through SPSS and the results were

$$Y = 27.46 + 3.68x_1; R_{x_1} = 0.9613; R^2_{x_1} = 0.924$$

$$Y = 57.16 + 0.085x_2; R_{x_2} = 0.04; R^2_{x_2} = 0.001608$$

$$Y = -38.06 + 3.96x_1 + 0.6x_2; R = 0.9997; R^2 = 0.9995$$

- Explain what these results mean. [15 marks]
- What is the expected score of a candidate who has worked 13 hours per week and who has an IQ of 102? [5 marks]

Q4

(a) Matai is a national wholesaler. The Company has become aware that many retailers are selling products below the recommended price. In a random sample of 200 retailers, it was found that 79 retailers sold products below the minimum price. In order to assist the accountant with the report, you are asked to:

- i. Describe what a random sample is and how one can be selected. [4 marks]
- ii. A 95% confidence limits for the proportion of retailers selling below the recommended price was calculated as (0.213;0.577), explain what it means.[4 marks]

(b) Define the following terms and you can give an example to clarify your definition. [12 marks]

- i. Null Hypothesis
- ii. Significance level
- iii. P Value
- iv. Critical Value
- v. Type one error
- vi. Confidence interval

(c) A medical student carried out an investigation into sufferers from bronchitis among smokers and non smokers. He wanted to test that smoking and being bronchial are independent. The results of the calculations gave $X^2 \text{ calc} = 12.94$. for $df = 5$, P value = 0.0483

- i. Write your null and alternative hypothesis
- ii. What can you conclude at 5% significance level and at 10 % significance Level?
- iii. If you have made a type 1 error at 5% significance level, in the conclusion, state any three possible sources of errors.
- iv. What can you do to minimize these errors?
- v. Write to possible consequences to this error[10 marks]