



"Investing in Africa's Future"

**COLLEGE OF BUSINESS PEACE LEADERSHIP AND
GOVERNANCE**

MMS 204: QUANTITATIVE METHODS2 EXAMINATION

END OF SECOND SEMESTER EXAMINATIONS

MAY/JUNE 2017

LECTURER: (P TARAMBAWAMWE)

DURATION:(3 HRS)

INSTRUCTIONS

ANSWER ALL QUESTIONS

SHOW ALL WORKING.

Q1. List 4 challenges that are faced in the calculation of index numbers
[4 marks]

Q2 a. There are fourteen juniors and twenty-three seniors in the Service Club.
The club is to send four representatives to the State Conference.

i) How many different ways are there to select a group of four students to attend the conference? [1 mark]

ii) If the members of the club decide to send two juniors and two seniors, how many different groupings are possible? [1 mark]

b .Suppose 7 students are staying in a hall in a hostel and they are allotted 7 beds. Among them, Parvin does not want a bed next to Anju because Anju snores. Then, in how many ways can you allot the beds? [3 marks]

c. There are 4 books on fairy tales, 5 novels and 3 plays. In how many ways can you arrange these so that books on fairy tales are together, novels are together and plays are together and in the order, books on fairy tales, novels and plays. [3marks]

Q3 A second hand car dealer has 10 cars for sale. The data collected from the cars

Age(years)	2	2.5	3	4	4.5	5	3	6	6.5	4.5
Mileage(km)	22	34	33	37	40	49	30	58	58	45

i. Calculate Pearson's correlation coefficient for the data and interpret it.[4 marks]

ii. On graph paper draw the scatter diagram of age against mileage for these cars[3 marks]

iii. Find the equation of regression line of mileage on age in the form
 $\text{mileage} = a + b(\text{age})$ [4 marks]

iv. Give a practical interpretation of a and b. [3 marks]

v. Plot your regression line on your scatter plot.[2 marks]

vi. Use your regression line to estimate the mileage of a 5 year old car. [2 marks]

vii. Comment about the reliability of your estimate. [2 marks]

Q4 a. Which type of progression is the following sequence?

- i. $10, 15, 22\frac{1}{2}, 33\frac{3}{4}, \dots$ [2 marks]
- ii. $3, 5, 8, 12, 17, \dots$ [2 marks]

b.

- i. Find the number of terms in the geometric progression $6, 12, 24, \dots, 1536$
[2 marks]
- ii. The 7th term of an arithmetic progression is 6. The sum of the first 10 terms of the progression is 30. Find the 5th term of the progression. [4 marks]
- iii. Babubhai borrows \$4000 and agrees to repay with a total interest of \$500 in 10 instalments, each instalment being less than the preceding instalment by \$10. What should be the first and the last installment? [5 marks]

Q5 In the precedence table, the figures in brackets represent the duration of each activity, i.e. the time required, in hours, for its completion.

- i. Draw the network diagram incorporating earliest and latest times. [6 marks]
- ii. What is the project completion time [1 mark]
- iii. Show the critical path on the diagram. [2 marks]
- iv. Calculate the slack for each non critical activity. [4 marks]

Activity	Depends on
A(3)	—
B(5)	—
C(2)	A
D(3)	A
E(3)	B, D
F(5)	C, E
G(1)	C
H(2)	F, G

End of paper