



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2016/2017

**SECOND YEAR FIRST SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE WITH INFORMATION
TECHNOLOGY**

MAIN CAMPUS

MAS 203: ECONOMIC STATISTICS

Date: 3rd December, 2016

Time: 8.30 - 11.30 am

INSTRUCTIONS:

- Answer question ONE and any other TWO questions.
- Observe further instructions on the answer booklet.



MAS.203: ECONOMIC STATISTICS.

INSTRUCTION: Answer Question One and any other Two Questions.

1.

- a) Compare and contrast the Gross Domestic Product deflector and the Consumer Price Index (6marks)
- b) A consumer protection group offered the following data on the prices in Shs. of a group of frequently used items.

Items	Prices in 1997	Prices in 1999	Prices in 2001
1 Loaf	5	6	7.5
Doz. Eggs	12	12.50	14
Veg. Oil	65	75	85
Milk-1 litre	11	12.50	14.70
Cheese-(1kg)	75	80	85
Butter.(1kg)	90	99	98

Taking 1997 as the base year construct for 1999 and 2001

- I. Simple aggregative price indices (3marks)
- II. Indices of average of price relatives. (3marks)
- c) Explain the main steps in the calculation of disposable income from the Gross Domestic Product. (4marks)
- d) Briefly describe the major considerations in the construction of the consumer price index. (6marks)
- e) Reconstruct the following index with 1995 as the base year. (4marks)

Year	1991	1992	1993	1994	1995	1996	1997
Index	110	130	150	175	180	200	220

- f) Prove that if $\frac{X_1}{X_2} < \frac{y_1}{y_2}$ then $\frac{X_1}{X_2} < \frac{X_1+y_1}{X_2+y_2} < \frac{y_1}{y_2}$ where X_1, X_2, y_1 and y_2 are positive numbers. Hence show that the Marshall-Edgeworth index number lies between the Lespeyres and Paasche index numbers. (4marks)

2.

- a) Construct the fisher price index for the data given below with 2004 as the base year hence show that the fishers index is the geometric mean of the laspeyres and paasches indices

Commodity	Price		Quality	
	2004	2008	2004	2008
Bread	14	22	40	60
Butter	12	18	25	35
Milk	8	11	60	55

(12marks)

- (b). Using the coefficient of linear correlation defined as

$$\rho_{xy} = \frac{\frac{\sum fxy}{N} - \left(\frac{\sum fx}{N}\right)\left(\frac{\sum fy}{N}\right)}{S_x S_y}$$

Where x is the relative price movements

y is the relative quantity movements

f represents the weights assigned.

Show that $\frac{P_{0i}^{LA}}{P_{0i}^{PA}} = 1 - \frac{\rho_{xy} S_x S_y}{V_{0i}}$ where V_{0i} is the index of the value expected in the i^{th} period over the base period. (8marks)

- b) The data below shows the price in Shs of a commodity over the years.

Year	2000	2001	2002	2003
Price in Shs	8	12	15	18

Define chain and link relatives hence use the above data to show the relationship between them. (6marks)

- c) The following are two series A and B of the index numbers of a commodity taking 1991 and 1994 as base years.

Years	Index series	Index series
	A	B
1991	100	
1992	90	
1993	125	
1994	150	100
1995		120
1996		150
1997		200
1998		225

- i) Splice the index series of A to B
- ii) Splice the index series of B to A

(8marks)

- d) Explain three major problems encountered in the construction of index numbers. (6marks)

3.

- a) Differentiate between Balance of trade and Balance of payments. (8marks)
- b) Below is a set of data showing labour productivity in million shillings for two industries in 1980 and 1981

Industry	1980		1981	
	Value added at 1980 prices	Employment	Value added at 1980 prices	Employment
A	2000	1000	1435	700
B	3000	1000	4960	1600

Calculate the overall productivity index for 1980 and 1981 using 1980 as the base period

(6marks)

- c) Using the geometric mean calculate the simple average of price relatives for the data below taking 2000 as the base year. (6marks)

Commodity	2000 Price in Shs	2001 Price in Shs.
A	50	70

B	40	60
C	80	90
D	110	120
E	20	20

4.

- a) For a hypothetical economy with books and pens only, the data below was collected for cost and quantity for pens and books.

Year	Pens		Books	
	Sh. P	Q	Sh. P	Q
2004	3	100	10	50
2005	3	120	12	70
2006	4	130	14	70

Calculate:

- I. Nominal G.D.P of 2004, 2005 and 2006. (4marks)
 - II. Real G.D.P for 2005 and 2006 taking 2004 as the base. (4marks)
 - III. The G.D.P deflator for 2005 and 2006 taking 2004 as the base year. (4marks)
- b) Given the following data compute Fisher's Ideal index hence prove that it satisfies the time reversal and factor reversal tests. (8marks)

Commodities	Base Year		Current year	
	P_0	Q_0	P_1	Q_1
A	5	60	8	60
B	2	100	2	120
C	5	50	6	70
D	8	40	10	30