



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF AGRICULTURE, ENVIRONMENT AND HEALTH SCIENCES

DEPARTMENT OF AGRICULTURAL SCIENCES

THIRD YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT AND TRADE)

AGB 308: AGRICULTURAL PRICE ANALYSIS

DATE: 25/8/2022

TIME: 2.00-4.00 PM

INSTRUCTIONS: Answer question ONE and any other TWO questions

QUESTION ONE (30 MARKS)

- a) Explain the law of one price (2 marks)
- b) Describe how agricultural prices are determined in
- i. Command economy (2 marks)
 - ii. *Laissez-faire* economy (3 marks)
- c) Explain the meaning of
- i. Consumer surplus (2 marks)
 - ii. Marketable surplus (2 marks)
 - iii. Real price (2 marks)
- d) Explain how the following would affect the price of rice in Kenya, other factors remaining constant
- i. Increase in consumer incomes (3 marks)
 - ii. Release of new high yielding rice varieties to farmers (3 marks)
 - iii. Doubling of excise duty on imported rice (3 marks)
- e) Explain the limitations of presenting price data using the following:
- i. Tables (2 marks)
 - ii. Graphs (2 marks)
 - iii. Measures of central tendency (4 marks)

QUESTION TWO (20 MARKS)

- a) Suppose the government of Kenya imposed a tax of ksh 10 per litre of a pesticide with a pre-tax price of KSh 100 per litre. Using an appropriate diagram, show who between the pesticide sellers and farmers would bear the tax burden (8 marks)
- b) The table below shows the hypothetical prices enjoyed by rice farmers and consumer price index (CPI) for four years between 2017 and 2021.

Year	2017	2018	2019	2020
Nominal Price (Ksh/kg)	209.8	260.0	275.0	305.1
CPI (2017=100)	164.29	174.24	178.25	184.21

- i. Calculate the real prices for each year, using 2017 as the base year (5 marks)
- ii. Change the base year to 2019 and re-calculate the real prices (5 marks)
- iii. Explain whether rice farmers were better off in 2020 than 2017 (2 marks)

QUESTION THREE (20 MARKS)

- a) Explain two roles of prices in a market-based economy (6 marks)
- b) A farmer harvested 20 bags of maize from her farm and sold them at a local grain market for KSh 3,500 per bag, after paying total transport cost of KSh 3,260 and market fees of KSh 750. Compute the *notional* farm-gate price (6 marks)
- c) Using the market model, explain the effect of a fertilizer price ceiling on the equilibrium price of maize grain (8 marks)

QUESTION FOUR (20 MARKS)

- a) Explain three causes of market failure (6 marks)
- b) Consider the following hypothetical supply and demand curves for wheat:
 $Q_t = -250 + 37.2P_t$ (1) (supply)
 $P_t = 220 - 50Q_t$ (2) (demand)

Where Q_t is the quantity (tons) at time (t) and P_t is the wheat price (Ksh) at time (t).

Calculate the:

- i. long-run market clearing price (3 marks)
- ii. long-run equilibrium quantity (3 marks)

b) Study the figures below and answer the questions that follow.

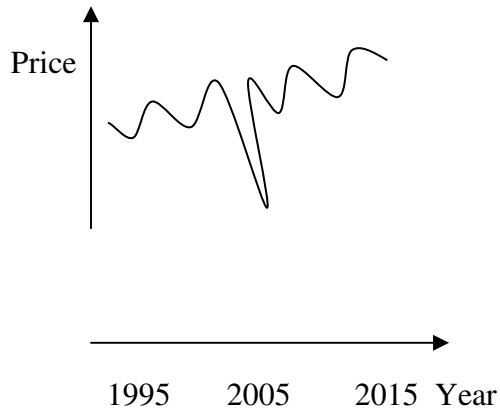


Figure A

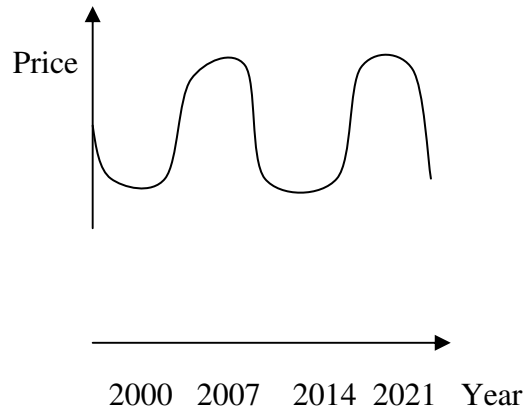


Figure B

For each of the figures:

- i. Explain the price trend (4 marks)
- ii. Highlight factors that may cause the trend (4 marks)

QUESTION FIVE (20 MARKS)

a) Giving examples, explain the following concepts

- i. Autoregressive models (4 marks)
- ii. Hedonic pricing models (4 marks)

b) The table below shows quantities and prices of market basket items in 2009, 2015 and 2021.

Item	Quantity per year			Price (Ksh)		
	2009	2015	2021	2009	2015	2021
Maize flour (kg)	138	127	121	28	22	49
Milk (litres)	345	288	253	56	66	99
Sugar (kg)	23	21	20	53	84	138
Meat (kg)	115	104	92	159	196	371

- i. Calculate the consumer price index for 2015 using the Paasche Index (5 marks)
- ii. Calculate the consumer price index for 2021 using the Laspeyres Index (5 marks)
- iii. Using the indices above, explain the price behaviour between 2009 and 2021 (2 marks)