LAIKIPIA UNIVERSITY

UNIVERSITY EXAMINATIONS

2ND SEMESTER 2023/2024 ACADEMIC YEAR

FOURTH YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)

AGEC 343: FARM MANAGEMENT (PRINCIPLES)

STREAM: ***AGED*** ***TIME: 2 HRS***

DAY: WEDNESDAY [11.30-1.30 P.M] ***DATE: 17/02/2024***

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

INSTRUCTIONS

(i) Answer question one and any other two questions
(ii) Do not write on the question paper

QUESTION ONE (30 MARKS)

a) "When the law of diminishing return is operative, production is carried out as long as the added return is greater than or equal to the added cost."

In view of this statement, and assuming unit input price of KES 12 and output price of KES 2 determine the optimum level of output and input that will maximise profit using the information below.

Input level X	TPP
0	0
1	12
2	30
3	44
4	54
5	62
6	68
7	72
8	74
9	72
10	68

b) Discuss the advantages of using farm management surveying methods for obtaining farm management data as opposed to other methods. **(5 marks)**

c) Farming is a high-risk business. State the five types of risks that occur in farming businesses. **(5 marks)**

d) State four ways in which a rotation programme can help improve farm production**.** **(4 marks)**

e) Planning is an important aspect of farm business. Explain six characteristics of a good farm plan **(6 marks).**

QUESTION TWO (20 MARKS)

a) On a medium-sized farm in a high-potential area of Njoro Sub-County, the relevant activities and constraints are found to be as shown in the table below.

		Coffee	Poultry	Potatoes	Beans	Wool
	GM per acre	1100	770	740	480	360
			Resource	Coefficients		
Constraint	Resources					
1st Rain Land	320	2	2	2	0	2
2nd Rain Land	320	2	2	0	2	2
Coffee	80	-	-	-	-	-
Uota						
March Labour	4800 MDs	0	60	40	0	40
April Labour	4800 MDs	60	40	20	0	30
Aug Labour	4800 MDs	40	40	20	20	20
Nov Labour	4800 MDs	0	60	0	10	20
Dec Labour	4800 MDs	75	20	0	10	20

Develop a programme plan for the farm, giving a feasible enterprise combination that maximises farm profits. **(15 marks)**

b) Discuss the various ways in which farm business performance can be measured. **(5 marks)**

QUESTION THREE (20 MARKS)

a) A farmer has 30 acres of arable land, 20 acres of which are under maize and 10 acres under grassland. He wishes to know whether replacing 10 acres of maize with Irish potatoes would be worthwhile.

Given the following information:

- The fertiliser rate would have to be increased from one bag per acre for maize to two bags per acre for potatoes
- An extra 20 man days of casual labour at the rate of KES. 40/MD will be necessary as a result of the change.
- Average yields of maize and potatoes are 15 and 50 bags per acre, respectively.
- The output prices are KES. 220 per bag of maize and KES. 180 per bag of potatoes.
- Seeds cost 120 per acre for maize and 320 per acre for potatoes.
- Fertiliser costs 850 per bag.

Draw up a partial budget and indicate the effects of the change and advise the farmer. **(10 marks)**

b) Farm management can be described as a problem-solving activity and as a decision-making activity. Discuss. **(10 marks)**

QUESTION FOUR (20 MARKS)

a) Discuss the characteristics under which these decisions are classified. Give an appropriate example in each case. **(10 marks)**

b) "Farm layout is important in organizing a farm for efficient management". Explain the factors you would consider when planning for a good farm layout. **(10 Marks)**

QUESTION FIVE (20 MARKS)

a) Explain five assumptions of programme planning when finding the optimal plan for a given set of conditions **(5 marks).**

b) Molo Dairy Company manufactures two brands of milk: fresh milk and yoghurt. Fresh Milk has a contribution of KES 4 per unit, and yoghurt has a contribution of KES 3 per unit. Yoghurt requires 20 machine minutes and 30 labour units to manufacture a unit. Total Available machine hours per day are 12 hours, whereas total available labour hours per day are 14 hrs.

Required:

i) Set up a linear programming problem for the company. **(7 marks)**

ii) How much of each brand should Molo Dairy Company produce if it wishes to maximize its daily contribution, assuming that all the brands produced are sold? **(8 marks)**