

SOUTHWESTERN UNIVERSITY NIGERIA

1. A farmer is considering his activities in the next farming season. He has a choice of three crops to select from for the next planting season: Groundnuts, maize and wheat.

KM 20, SAGAMU-BENIN EXPRESSWAY, OKUN OWA, IJEBU-ODE, OGUN STATE.

Whatever is his choice of crop, there are four weather conditions that could prevail: heavy rain, moderate rain, light rain and no rain.

2018/2019 THIRD SEMESTER EXAMINATION

In the event that the farmer plants groundnuts and there is heavy rain, he expects to earn a

proceed of N750,000 at the end of the farming season, if there is moderate rain N1,000,000; light rain N450,000; if there is no rain, there is a loss of N1,000. If the

farmer plants maize, the following will be his proceeds after the harvest considering the weather condition: heavy rain N1,200,000, moderate rain N1,500,000, light rain N600,000, and no rain N2,000. If the farmer

decides to plant wheat, he expects to earn the following: heavy rain N1,150,000, moderate rain N1,300,000, light rain N800,000, and no rain a loss of N200,000.

INSTRUCTION: Answer question 1 and any other 3 questions. **TIME:** 2hrs

The farmer has contacted you, an expert in decision analysis to advise him on what to do.

(a) Construct a payoff matrix for the above situation.

(b) Using the following criteria:

(i) Maximax criterion

(ii) Maximin criterion

(iii) Minimax criterion

(iv) Hurwicz criterion

(v) Savage/Regret criterion

(c) With the probabilities of 0.1 for No Rain; 0.2 for light rain; 0.3 for moderate rain; and 0.4 for heavy rain, advise the farmer on the course of action to adopt. Assumed

2. J Ventures, a small organisation that is into plantainchips business, is analysing some alternative decisions concerning the production of her plantainchips. It can be purchased from a

(i) Supplier for N80 per pack or produced in house using the either locally fabricated

(ii) or imported machine

(iii) The firm can produce the plantainchips for N50 per pack, but will need to invest N80,000

(iv) in an important machine

(v) Another alternative, using a locally fabricated machine, would produce the plantainchips at a

(vi) cost of N60 per pack with a fixed cost of N40,000.

(vii) With the probabilities of 0.1 for No Rain; 0.2 for light rain; 0.3 for moderate rain; and 0.4 for heavy rain, using the method of Expected Monetary Value (EMU), advise on the best alternative.

J Ventures has also estimated the annual demand with corresponding probability distribution

2. J Ventures, a small organisation that is into plantainchips business, is analysing follows: alternative decisions concerning the production of her plantainchips. It can be purchased from a

Quantity supplied Demand for Plantainchips Probability
fabricated 7,000 or imported 0.15
8,000 0.45
9,000
The firm can produce the plantainchips for N50 per pack, but will need to invest

