NATIONAL OPEN UNIVERSITY OF NIGERIA

Plot 91, Cadastral Zone, Nnamdi Azikiwe Express Way, Jabi - Abuja

FACULTY OF MANAGEMENT SCIENCES

FEBRUARY 2018 EXAMINATION

COURSE CODE: BUS406
COURSE TITLE: Analysis for Business Decisions
CREDIT UNIT: 3
INSTRUCTION: 1. Indicate your Matriculation Number clearly
2. Attempt question one (1) and any other three (3) questions; four questions in all
3. Question one (1) is compulsory and carries 25 marks, while the other questions carry 15 marks each.
4. Present all your points in a coherent and orderly Manner
TIME ALLOWED: 2½ Hours

1a. Describe the components of Decision making. **8marks**

b. A farmer is considering his activity in the next farming season. He has a choice of three crops to select from for the next planting season – Groundnuts, Maize, and Wheat. Whatever is his choice of crop; there are four weather conditions that could prevail: heaving rain, moderate rain, light rain, and no rain. In the event that the farmer plants Ground nuts and there is heavy rain, he expects to earn a proceed of ₦650,000 at the end of the farming season, if there is moderate rain ₦1,000,000, high rain – ₦450,000 and if there is no rain – (-₦1,000) If the farmer plants Maize, the following will be his proceeds after the harvest considering the weather condition: heavy rain – ₦1,200,000, moderate rain – ₦1,500,000, Light rain – ₦600,000 and no rain ₦2000. And if the farmer decides to plant wheat, he expects to make the following: heavy rain – ₦1,150,000, moderate rain – ₦1,300,000, Light rain- ₦800,000 and No rain – ₦200 -000.
The farmer has contact you, an expert in OR to help him decide on what to do.

Required: Construct a payoff matrix for the above situation, analyse completely and advise the farmer on the course of action to adopt. Assume $\alpha = 0.6$. **17marks**

2a. Discuss four steps in Decision Theory Approach **10marks**
b. What are the errors that can occur in making decisions? **5marks**

3a. Define project management **7marks**

b. State the assumptions of games theory. **8marks**

4a. Explain the Monte Carlo Simulation **(5marks)**

b. Consider the contingency Matrix Below

Contingency Matrix

States of Nature	Alternatives		Probability
	Stock Rice (A_1)	Stock Maize (A_2)	
High demand (S_1) (₦)	8,000	12,000	0.6
Low demand (S_2) (₦)	4,000	-3,000	0.4

Represent the above payoff matrix on a decision tree and find the optimum contingency strategy.**10marks**

5a. Discuss the concept of entropy **5marks**

b**.** Present a brief and concise history of the waiting line model. **10marks**

6a. Using relevant diagram, define Systems Theory. **5marks**

b. A stock keeper has to supply 12000 units of a product per year to his customer. The demand is fixed and known and the shortage cost is assumed to be infinite. The inventory holding cost is ₦ 0.20k per unit per month, and the ordering cost per order is N350. Determine

i. The optimum lot size q_0 **3marks**
ii. Optimum scheduling period t_0 **3marks**
iii. Minimum total variable yearly cost. **4marks**