NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, NnamdiAzikiwe Express Way, Jabi - Abuja
FACULTY OF MANAGEMENT SCIENCES
2022_2EXAMINATION

COURSE CODE: ENT 704
COURSE TITLE: QUANTITATIVE METHODS
CREDIT UNIT: 2
INSTRUCTION: 1. Indicate your Matriculation Number clearly

2. **Attempt question one (1) and any other two (2) questions; three questions in all**
3. **Question one (1) is compulsory and carries 30 marks, while the other questions carry 20 marks each.**
4. **Present all your points in a coherent and orderly Manner**

TIME ALLOWED: 2½Hours

Question 1

Identify and discuss the four conditions under which decisions can be made.. **30 marks**

Question 2

An investor is confronted with a decision problem as represented in the matrix below. Analyze the problem using the Expected Monetary Value Criterion (EMV), analyze the situation and advise the investor on the best strategy to adopt. **20 marks**

	Alternative	**Alternative**	**Alternative**	**Alternative**
State of Nature	**Expand (d_1)**	**Construct (d_2)**	**Subcontract (d_3)**	**Probability**
High (N)	**50,000**	**70,000**	**30,000**	**0.5**
Moderate (N)	**25,000**	**30,000**	**15,000**	**0.3**
Low (N)	**25,000**	**-40,000**	**-1,000**	**0.15**
Nil (N)	**-45,000**	**-80,000**	**-10,000**	**0.05**

Question 3

List and explain the elements of a system. **20 marks**

Question 4

A company produces three products. These products are processed on three different machines. The time required to manufacture one unit of each of the three products are the daily capacity of the three machines are given in the table below: **20 marks**

Machine	**Product 1**	**Product 2**	**Product 3**	**Machine Capacity (minutes/day)**
M_1	**3**	**4**	**3**	**440**
M_2	**5**	**-**	**4**	**570**
M_3	**3**	**6**	**-**	**530**

It is required to determine the daily number of units to be manufactured for each product. The profit per unit for product 1, 2, 3 is N5, N4, N7 respectively. Formulate the mathematical Linear programming model that will maximize the daily profit.