NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI, ABUJA
FACULTY OF MANAGEMENT SCIENCES
DEPARTMENT OF FINANCIAL STUDIES
2019_1 EXAMINATIONS

COURSE CODE: BFN728   **CREDIT UNIT: 2**
COURSE TITLE: QUANTITATIVE TECHNIQUES FOR FINANCIAL DECISIONS
TIME ALLOWED: 2 HRS
INSTRUCTIONS:
1. Attempt Question One (1) and any other two (2) questions
2. Question 1 carries 30 marks, while the other questions carry 20 marks each
3. Present all points in coherent and orderly manner

(1) A small project consists of seven activities for which the relevant data are given below:

Activity	Preceding activities	Time duration (weeks)
A	-	8
B	-	4
C	A	4
D	A	11
E	B	9
F	C	3

   (a) Draw the network of the project.   **(10 marks)**
   (b) Identify the activity paths in the project.   **(6 marks)**
   (c) Which path of activities is critical?   **(2 marks)**
   (d) What is the duration of the critical path?   **(2 marks)**
   (e) Which activities in this project should be crashed?   **(4 marks)**
   (f) What is the amount of slack time for each activity path? **(6 marks)**

(2) A commodity has a steady rate of demand of 2,000 units per year. Placing an order costs ₦200 and it costs ₦50 to hold a unit of the commodity for a year. The purchase cost of the commodity is ₦250.
   (a)   Estimate the Economic Order Quantity (EOQ)   **(8 marks)**
   (b)   Find the number of orders placed per year   **(6 marks)**
   (c)   What is the length of the inventory circle, for a 365 days operating year? **(4 marks)**
   (d)   If the company is offered a 10 per cent price discount if it buys a minimum quantity of 150 units, should the company accept the offer?   **(2 marks)**

(3a)   XYZ Company produces product A for which cost (including labour and material) is ₦6/unit. Fixed cost is ₦80, 000. Each unit is sold for ₦10. Determine the number of units which must be sold for the company to earn a profit of ₦60, 000. **(10 marks)**

(3b) A total of ₦10, 000 was invested in two business ventures, A and B. At the end of the first year, A and B yielded returns on the original investments of 6 percent and 5.75 percent respectively. How was the original amount allocated if the total amount earned was ₦588.75?   **(10 marks)**

(4a) A publishing company finds that the cost of publishing each copy of a magazine is ₦0.38. The revenue from dealers of the magazine is ₦0.35 per copy. The advertising revenue is 10% of the revenue received from dealers for all copies sold beyond 10,000 units. What is the least number of copies which must be sold so as to have a positive profit?   **(10 marks)**

(4b) An ice-cream salesman classifies days into 'Sunny' 'Medium' or 'Cold'. He estimates that the probability of a sunny day is 0.2 and that 30% of days are cold. He has also calculated that his average revenue on the three types of days are ₦220, ₦130, and ₦40, for Sunny, Medium, and Cold days respectively. If his average total cost per day is N80, calculate his expected profit per day. **(10 marks)**

(5) The followings are two capital projects involving the purchase, use and final disposal of two machines, machine A and machine B:

Machine Type	Initial Cost	Net Cash Flows (₦)			
		Year 1	Year 2	Year 3	Year 4
Machine A	50,000	25,500	24,500	17,000	14,000
Machine B	45,000	12,500	15,500	21,000	38,000

You are required to choose between projects A and B using each of the following appraisal techniques:

(a) Net Present Value (NPV), using a cost of capital of 22% (and 28%).   **(10 marks)**

(b) Internal Rate of Return (IRR), to be estimated using the results from (a). **(10 marks)**