NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, Nnamdi Azikiwe Express Way, Jabi– Abuja
FACULTY OF MANAGEMENT SCIENCES
DEPARTMENT OF PUBLIC ADMINISTRATION
2021_1 EXAMINATION

COURSE CODE: PAD 813

COURSE TITLE: QUANTITATIVE METHODS FOR PUBLIC ADMINISTRATION

CREDIT UNITS: 3 TIME ALLOWED: 3 Hrs

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 25marks, while the other questions carry 15 marks each.**
4. **Present all your points in coherent and orderly Manner**

(1a) In recent times, very few business and economic decisions are made without the application of quantitative techniques. Why? **10 marks**.

(b) Sweet Cola Company is in the business of manufacturing bottled soft drinks (150cl). Through market research and comparism with other products, management agree, that the product can be priced between ₦50 and 150 and still compete effectively in the market. Below is the quantity and price alternative schedules.

	1	2	3
P	₦50	₦100	₦150
Q	₦5000	₦1500	₦1200
C	₦210, 000	₦105, 000	₦85, 000
R	₦250, 000	₦150, 000	₦180, 000

Where P = price, Q = quantity, C = Cost and R = Revenue, determine the Profit (¤) of each of the pricing alternatives, **12 marks (4 marks each).**

(i) From the table which price is the best price? **3 marks.**

(2)a) Outline and explain the general approaches to the development of mathematical models of economic decisions. **12 marks**

(b) State the two basic tools that constitute quantitative analysis. **3 marks**

(i) Mathematical tools **1½ marks**

(ii) Statistical tools **1½ marks**

(3)a) What is median? **5 marks**.

(b) Consider the following raw data on hourly wage rate for six executive managers' raw data in (₦) x

$X_1 = 950$
$X_2 = 300$
$X_3 = 1000$
$X_4 = 950$
$X_5 = 850$
$X_6 = 750$

Determine the median hourly wage of the six managers. **10 marks**

Ordered Array: 300, 750, 850, 950, 950, 1000 **3 marks**

$$\frac{850+950}{2}$$ **4 marks**

$$\frac{1800}{2} = 900$$ **3 marks**

(4) Given that coefficient of variation = $CV = \frac{(S)}{X} = 100\%$ where S = Standard Deviation and X = Variation.

Assuming a potential investor is considering the purchase of shares in one or two companies, A or B, each share of stock in company A has an average of ₦80 over the past months with standard deviation of ₦20. In addition, suppose that in this same time period, the price per share for company B's stock averaged ₦15 with a standard deviation of ₦5. Determine the coefficient variability in price relative to the average price of the two stocks. **15 marks.**

(5) Define the concept of probability. **5 marks**

(b) State and explain the two basic ways of calculating probability. **10 marks**