



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESS WAY, JABI – ABUJA**  
**FACULTY OF MANAGEMENT SCIENCES**  
**DEPARTMENT OF FINANCIAL STUDIES**  
**2020\_2 EXAMINATION...**

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**COURSE CODE: BFN728**

**CREDIT UNIT: 2**

**COURSE TITLE: QUANTITATIVE TECHNIQUES FOR FINANCIAL DECISION**

**TIME ALLOWED: 2HRS**

**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**
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**1a.** Consider an investor's holding in the shares of four companies in 2010 and 2012 is shown in Table below:

Investor's Holding of Four Companies

	No of shares		Price per share (N)	
Company	2010	2012	2010	2012
A	350	400	0.50	1.25
B	200	180	1.25	3.75
C	140	200	6.25	12.50
D	130	150	12.50	18.75

Using 2010 as base year, calculate:

- (i) a simple aggregate price index, and **7 marks**
  - (ii) a weighted aggregate price index for the investor's holding of shares. **7 marks**
- b.** Differentiate between Laspeyres Price Index and Paasche Price Index. **8 marks**
- c.** Discuss four limitations of index number. **8 marks**

**2a.** Let  $P = 100 - q^2$  represent a demand function. Find the rate of change of price,  $P$ , with respect to unit changes in  $q$ . How fast is the price changing with respect to  $q$ , when  $q = 5$ , assuming that  $P$  is in naira? **6 marks**

**b.** A manufacturer's cost function is given by:

$$C = \frac{q^2}{4} + 3q + 400 = 0.25q^2 + 3q + 400$$

where  $q$  = number of units produced.

At what level of output will average cost per unit be a minimum? What is the minimum cost? **14 marks**

**3a.** Given the data below, determine the correlation between price,  $X$ , and quantity supplied,  $Y$  **14 marks**

Time Period ( in days)	Quantity Supply ( $Y_i$ ) ( in tons)	Unit Price ( $X_i$ ) (in Naira)
1	10	2
2	20	4
3	50	6
4	40	8
5	50	10
6	60	12
7	80	14
8	90	16
9	90	18
10	120	20
$n = 10$	$Y_i = 610$	$X_i = 110$

**b.** Differentiate between rank and partial correlation **6 marks**

**4a.** A number of families of a particular type were measured by the number of children they have, given the following frequency distribution:

Number of children:	0	1	2	3	4	5 or more
Number of families:	12	28	22	8	2	2

Use this information to calculate the (relative frequency) probability that another family of this type chosen at random will have:

(i) 2 children **3.5 marks**

- (ii) 3 or more children **3.5 marks**
- (iii) less than 2 children **3 marks**

**b. Explain four basic laws of probability. **10 marks****

**5a.** A commodity has a steady rate of demand of 2,000 units per year. Placing an order costs N200 and it costs N50 to hold a unit for a year:

- (i) Estimate the Economic Order Quantity (EOQ) **6 marks**
- (ii) Find the number of orders placed per year **4 marks**
- (iii) What is the length of the inventory circle? **4 marks**

**b. Explain the difference between Economic Order Quantity (EOQ) and Economic Batch Quantity (EBQ) . **6 marks****