



**BOWEN UNIVERSITY, IWO**  
**COLLEGE OF MANAGEMENT AND SCIENCES**  
**ECONOMICS PROGRAMME**  
**B.Sc. DEGREE 2022/2023 ACADEMIC SESSION**  
**SECOND SEMESTER EXAMINATION**

**Course code: ECN 206**

**Course credit: 2**

**Course title: Statistical Methods in Economics II**

**Time allowed: 2 hours 30mins**

**Instruction: Answer any four questions. Provide your answers clearly and show your workings step by step.**

1. Assuming the following data show the ranking of ten cities of the world by 2 students

Cities	Cairo	California	Monrovia	Hungary	Peru	Sydney	Ibadan	Brasilia	Kumasi	Iwo
X	3	9	4	2	5	1	8	6	7	10
Y	6	2	7	10	3	9	4	8	1	5

You are required to:

- Find the correlation coefficient using the Spearman rank correlation method (10 marks)
  - Interpret the result from question 1(a) indicating the strength and direction of the relationship between the two rankings (2.5 marks)
  - Use the correlation coefficient obtained in (a) above to test the hypothesis at 0.05 level of significance. (5 marks)
- (17.5 marks)**

2. The table below shows the prices and quantities of five commodities in the Nigerian market.

	2012		2021	
Commodity	Price	Quantity	Price	Quantity
Kola-nut	10	10	5	25
Cocoa	35	4	35	10
Palm Kernel	30	3	15	15
Vegetable oil	10	25	20	20
Cotton	40	3	40	5

You are required to construct the index number of prices in the year 2021 using

- The Laspeyre's method (3.5 marks)
  - The Paasche's method (3.5 marks)
  - The Fisher's Ideal method (3.5 marks)
  - The Marshall Edgeworth method (3.5 marks)
  - The Dorbish and Bowley index method (3.5 marks)
- (17.5 marks)**

3. a. Provide succinct but concise note on the various components of time series data (8 marks)

b. What are the usefulness of time series data? (4 marks)

c. Determine the nature of association that exist between the following pairs of variables.



(Indicate whether a positive, negative or zero association exist)

- i. The amount of time spent watching TV and heating bills
- ii. Number of hours on video games and test score
- iii. Distance travelled and the quantity of fuel needed in a vehicle
- iv. Price of good A and the quantity demanded of good A
- v. Age of car and mileage in kilometre
- vi. The level of Intelligence and height of an individual
- vii. Hot temperature and Ice cream sales
- viii. Hours spent exercising and body fat
- ix. Coffee consumption and the level of Intelligence
- x. The height and weight of an individual
- xi. Level of sales and high cost

(5.5 marks)

(17.5 marks)

4. The following data represent the monthly income earned in Naira and number of hours of working in a government owned establishment.

INCOME in thousands (Y)	4	2	5	1	3	4	8	2
HOURS OF WORK PER WEEK (X)	20	10	8	4	4	5	20	10

- a. Using the Pearson's product method, can we hypothesize that the hour of work significantly related to income? Interpret your results. (12.5 marks)
- b. Conduct the test of significance of this relationship at 0.01% (5 marks)

(17.5 marks)

5. The table below contain observations on the quantity demanded (Y) of a certain commodity for the period 1980 – 1995

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
10	20	40	60	30	40	30	50	80	20	70	60	70	30	40	80

- a. Plot the quantity demanded on a graph (2 marks)
- b. Compute the trends by the method of moving averages assuming that a 4-year cycle is present in the series (10 marks)
- c. Plot the trend values on the same graph as in question a. (2 marks)
- d. Predict the demand for the year 2020 (3.5 mark)

(17.5 marks)

6. The record below shows the monthly sales of Apple phones in the year 2022.

Time (t)	January	February	March	April	May	June	July
Sale	100	120	150	230	250	300	310

- a. Compute the trend equation, fitting the value for slope and intercept. (12 marks)
- b. Interpret the equation in question a. (3.5 marks)
- c. Predict the sales value for November, 2022. (2 marks)

(17.5 marks)