



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**FACULTY OF SOCIAL SCIENCES**  
**DEPARTMENT OF ECONOMICS**  
**2024\_2 EXAMINATION**

**COURSE TITLE: APPLIED STATISTICS**

**COURSE CODE: ECO 452**

**UNITS: 2**

**TIME ALLOWED: 2 HOURS**

**INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER TWO (2) QUESTIONS**  
**QUESTION ONE CARRIES 30 MARKS WHILE OTHER QUESTIONS CARRY 20 MARKS**  
**EACH**

- 1a.** State and explain the assumption of analysis of variance (5 marks)  
**b.** Describe the steps involved in Analysis of Variance (ANOVA) Analysis (5 marks)  
**c.** Explain the decision criteria for accepting or rejecting hypothesis? (5 marks)  
**d.** The table below shows the average monthly production, for a certain country of bituminous coal in millions of kilogram for the years 2008-2018. Construct a 3 year moving average (15 marks)

2008	50
2009	35.5
2010	43.0
2011	44.5
2012	38.9
2013	38.1
2014	32.6
2015	38.7
2016	41.7
2017	41.1
2018	33.8

- 2a.** Using Binomial Distribution what is the probability of obtaining 3 heads in 5 toss of a balanced coin.  
**b.** In a binomial distribution what is the probability of obtaining less than 3 heads in 5 toss of coin. (20 marks)

- 3a.** The table below shows the sale of a chemist:

Years	Sales
2000	85
2001	96
2002	108
2003	123
2004	98

Make a freehand sketch of the information in the table.

- b.** Discuss the components of time series (20 marks)

- 4a. Explain the estimation of time series using semi-average method.  
 b. The table below shows sales of a company per quarter in a year

	Quarter			
Years	1	2	3	4
1982	600	820	400	720
1983	630	840	420	740
1984	670	900	430	760

Estimate a 4-year moving averages using semi-average method

(20 marks)

- 5a. Discuss different methods of estimating index number.  
 b. Given the following information about Open University, estimate the price index for 1990 with 1986 as base year using Marshall edge-worth price index (MEPI) and Marshall edge-worth quantity index (MEOI)

Commodity	Quantities		Prices	
	1986	1990	1986	1990
A	30	70	75	360
B	40	100	160	300
C	50	150	250	960
D	15	33	180	291

(20 marks)