

BOWEN UNIVERSITY
COLLEGE OF SOCIAL AND MANAGEMENT SCIENCES
ECONOMICS PROGRAMME
B.Sc. DEGREE EXAMINATION 2020/2021 ACADEMIC SESSION
FIRST SEMESTER EXAMINATION

Course Title: Economic Statistics Course code: ECN 306 Course credit: 2
 Time Allowed: 2 hours Date: March, 2021

Instruction: Answer any four questions. Provide your answers clearly by showing your workings step by step

1. There are five treatments (A, B, C, D, and E) for lowering blood pressure. Each treatment yields different results when administered and the treatments are recorded as follows. Test at 5% level of significance whether treatment have the same mean effect using ANOVA.

Treatment				
A	B	C	D	E
12	10	3	7	16
6	15	2	8	18
5	14	7	7	21
7	13	8	10	19
10	12	3		21
	12	1		
	12			

17.5 MARKS

2. Consider the model that reflects the relationship between real GDP, labour force, capital and energy consumption in Egypt between the period 1972 - 2015. The output from estimating the equation is given below.

Variables	Coefficient	Std. Error	T-statistics	Probability
C	3.6523	0.4326	A	0
Log (LF)	5.7854	B	2.5679	0
Log (GFCF)	C	0.0578	1.9876	0.0057
Log (EC)	0.4359	D	4.9953	0.0001
R-squared	0.9567	Mean dependent variable	12.758	0.0048
Adjusted R-squared	E	S.D. dependent variable	0.7652	
S.E. of regression	0.0876			
Sum of square residual	F			

Use the information provided in the table to find out the missing figures and interpret your result.

17.5 MARKS

3. A system of equations is given below. Find the value for the unknown variables in the following using the crammer's rule

a. $5X_1 - 2X_2 + 3X_3 = 16$

$2X_1 + 3X_2 - 5X_3 = 2$

$4X_1 - 5X_2 + 6X_3 = 7$

b. $2P_1 + 4P_2 - P_3 = 52$

$-P_1 + 5P_2 + 3P_3 = 72$

$3P_1 - 7P_2 + 2P_3 = 10$

17.5 MARKS

4. The sales manager of Bowen Ventures gathered data on the level of sales in its Bakery Outlet. The results gathered throughout the year (January to December) is as follows: 40, 23, 33, 44, 47, 35, 20, 45, 46, 57, 68 and 34. Using the Chi Square distribution, is there any evidence that sales are evenly distributed throughout the year? Test at 0.05 level of significance.

17.5 MARKS

5. Compare and contrast the following statistical concepts

- a. Type 1 and Type 2 error
- b. Parameter and Statistic
- c. Null hypothesis and Alternative hypothesis
- d. Time series and Cross-sectional data
- e. Correlation and Regression analysis

17.5 MARKS

6. The table below contain observations on the quantity demanded (Y) of a certain commodity, its price (X₁) and consumer's income (X₂)

Y	2	1	3	2	2	3
X ₁	2	1	3	1	1	3
X ₂	1	2	1	3	1	2

- a. Derive the normal equation
- b. Using the methods of determinant and crammer's rule, fit an equation of the form $Y = a_0 + a_1X_1 + a_2X_2$
- c. Interpret your results

17.5 MARKS