GWANDA STATE UNIVERSITY

BAC 1202

FACULTY OF BUSINESS SCIENCES AND MANAGEMENT

DEPARTMENT OF ACCOUNTING

QUANTITATIVE ANALYSIS FOR BUSINESS II

GWANDA TOWN CAMPUS

Ms B. Kwirira

APRIL 2024: EXAMINATION
Time : 3 hours

Candidates should attempt **ALL** questions from **Section A** (40 marks) and **ANY TWO** questions from **Section B** (30 marks each).

Instruments and Materials

- Calculator.
- Statistical tables.

SECTION A: Answer ALL questions [40].

A1. (a) List four components of time series. [4]

(b) Briefly explain the terms correlation, covariance and regression equation. [9]

A2. (a) A Spar retailer observed a random sample of 160 customers and found that 68 customers paid for their grocery purchases by cash and the remainder by credit card. Construct a 95 percent confidence interval for the actual percentage of customers who pay cash for their grocery purchases. [7]

A3. (a) The classified advertisement columns of a local paper contain details of used cars of a particular make and model. The prices of these cars (000dollars) and the mileage they have travelled (000km) are:

price	6	6.8	4.7	3.5	6	8	4.5	5	3.5	3.5
mileage	9	10	11	33	14	5	19	22	35	45

(i) Calculate the covariance between price and mileage. [5]

(ii) Calculate and comment on the correlation coefficient. [4]

(iii) Estimate the least squares parameters β_0 and β_1 and comment on your results. [7]

(iv) Calculate and comment on the coefficient of determination. [4]

SECTION B: Answer ANY three questions [60].

B4. a. Briefly explain the term regression analysis. [5]

b. Car parking spaces in a city centre are in short supply. The cost (in dollars) of parking a car for a whole day in seven public car parks within the city and the distances between the parking bays and the monument that is considered the centre of the city (in km) are:

Cost	5	5	8	10	12	15	18
Distance	1.5	1.2	0.8	0.5	0.4	0.2	0.1

(i) Calculate the correlation coefficient and comment on it. [7]

(ii) Calculate the covariance between distance and parking cost. [7]

(iii) Fit the least squares line and comment on your results. [4]

(iv) Calculate the coefficient of determination and comment on it. [7]

B5. a. Explain with the aid of examples the following components of time series;

(i) Seasonal component [4]

(ii) Irregular component [4]

b. The following information shows the quarterly car sales of Hacha Car Sales in Harare

Year	Q1	Q2	Q3	Q4
2010	100	125	127	102
2011	104	128	130	107
2012	110	131	133	109
2013	108	135	140	111

(i) Calculate the four quarterly moving average (trend) of the sales. [6]

(ii) Calculate the seasonal variations for the data series. [4]

(iii) Seasonally adjust the original data series. [4]

(iv) Calculate the trend values using the method of semi-averages. [3]

c. Outline the steps involved in Hypothesis testing. [5]

B6. a. The strength of steel wire made by an existing process is normally distributed with a mean of 1250 and a standard deviation of 150. A batch of wire is made by a new process, and a random sample consisting of 25 measurements gives an average strength of 1312. Assume that the standard deviation does not change. Is there evidence at the 1 percent level of significance that the new process gives a larger mean strength than the old? [10]

b. Suppose that a recent survey of 29 street vendors in Beitbridge showed that 12 of them felt that the city by-laws hampered their trading, while 9 out of 22 street vendors in Filabusi felt that the city by-laws were hampering their trading. Is there a difference in the views of the vendors in the two cities? Use 99 percent confidence level. [10]

c. During the winter of 2015, the average electricity bill for residents of Cairo was E£ 350, with a standard deviation of E£45.

(i) What proportion of homes had a bill of over 389? [3]

(ii) Find the proportion of homes with bills of between E£450 and E£285. [3]

(iii) What is the probability that a randomly selected household have a bill between 470 and 390 pounds? [4]