

ZIMBABWE EZEKIEL GUTI UNIVERSITY



FACULTY OF COMMERCE

PROGRAMMES:

B. COM ACCOUNTING

B. COM MARKETING

B. COM ENTREPRENEURSHIP

COURSE: QUANTITATIVE ANALYSIS FOR BUSINESS

COURSE CODE: CBM103

DURATION: 3 HOURS

15 JUNE 2018

INSTRUCTIONS TO CANDIDATES

1. No cell phones are allowed in the examination venue.
2. Begin each question on a new page.
3. Answer **all** questions.

ADDITIONAL REQUIREMENTS:

- 1) Students must bring calculators
- 2) Statistical tables and formulae are provided
- 3) Graph paper

1(a) Explain the steps involved in planning and execution of a research project (10 marks)

b The number and gender of employees, international companies and indigenous companies were recorded and tabulated as shown below

	International	Indigenous	NGOs
Male	200	200	100
Female	150	300	100

- (i) Find the probability that a randomly selected employee is a female (3 marks)
 (ii) Find the probability that a randomly selected employee is a male given that he is from an NGO. (4 marks)
 (iii) Find the probability that a randomly selected employee is a male employed by an international organisation (3 marks)
 (iv) What percentage of employees of NGOs are indigenous women? (3 marks)

[Total: 22 marks]

2 (a) You are given the following data

2491	2625	2576	2746	2505	2535	2615	2613
2555	2671	2838	2637	2580	2686	2937	2880
2627	2637	2732	3060	2550	2505	2815	2968

a) Using the formulae

$$k=1+3.322\log n$$

where n=number of observations. Determine the number of classes, k (1 mark)

(b) What is frequency distribution and why is it important in statistics (3 marks)

c) Starting at 2490, using part (a) result, construct a frequency distribution. (3 marks)

d) Using the frequency distribution, calculate

(i) the mean and (3 marks)

(ii) the median (3 marks)

c) In a sample of 500 first year Statistics examination results, the average mark obtained was 57% with a standard deviation of 8%.

i) Calculate the number of students who failed the examination when 49% and below is regarded as a failure (5 marks)

ii) The faculty would like to give book prizes to the top 1% of the students. What is the least mark a student should have in order to get a book prize (3 marks)

[TOTAL:20 Marks]

3 a) Suppose you are given the following time series data

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Sales	13	15	18	20	24	27	30	32	35	36

i) Calculate a three-point moving average of the data (4 marks)

ii) Estimate the trend line using the least squares method in conjunction with the sequential numbering method (6 marks)

b) In a survey to determine the amount of money charged per hour for consultants by Professors, a sample of nine Professors was randomly selected. The following data were obtained

4600 4400 9250 6200 7400 8500 5850 8350 7600

- i) Construct a 95% confidence interval estimate for the true charge per hour in this group (5 marks)
- ii) Suppose prior to this survey, a market researcher claimed that the hourly charge of Professors was \$7 500. Test at 5% level of significance the market researcher's claim (5 marks)

[TOTAL: 20 Marks]

4. a) Suppose you are given the following data:

Year	Output	Employees	Year	Output	Employees
1990	1740	175	1995	2372	480
1991	1926	220	1996	2496	490
1992	875	260	1997	2525	410
1993	1020	310	1998	2590	440
1994	2250	450	1999	3780	520

- a) State the independent and the dependent variables (2 marks)
- b) Find the least squares regression equation for predicting output per employee (6 marks)
- c) Give a brief interpretation of the meanings of the regression coefficients (2 marks)
- d) Predict the output when the number of employees is 500. (1 mark)
- e) Calculate the coefficient of determination and interpret it. (5 marks)
- f) Calculate the simple indices of output for each year using 1990 as the base year (4 mark)

[TOTAL:20 Marks]

- 5 a) The phone lines to an airline reservation system are occupied 40% of the time. Assume that the events that the lines are occupied on successive calls are independent. Suppose 10 calls are placed to the airline
- i) What is the probability that, for exactly three calls, the lines are occupied? (3 marks)
- ii) What is the probability that, for at least one call, the lines are not occupied? (3 marks)
- iii) What is the expected number of calls in which the lines are all occupied (2 mark)
- b) The line width of a tool used for semiconductor manufacturing is assumed to be normally distributed with a mean of 0.5 micrometer and a standard deviation of 0.05 micrometer.
- i) What is the probability that a line width is greater than 0.62 micrometer (4 marks)
- ii) How many tools do you expect to have a line between 0.47 and 0.63 micrometer if there are 500 tools altogether (5 marks)

[TOTAL:18 Marks]

****END OF PAPER****