



UNIVERSITY OF EMBU

2017/2018 ACADEMIC YEAR

TRIMESTER EXAMINATIONS

EXAMINATION FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN BUSINESS ADMINISTRATION.

DCC 701: BUSINESS STATISTICS

DATE: AUGUST 7, 2018

TIME: 2:00-5:00PM

INSTRUCTIONS:

Answer Question ONE and ANY Other THREE Questions.

QUESTION ONE (25 MARKS)

- a) Distinguish the following terms as used in business statistics
- i) Continuous or Quantitative Variables vs Discrete or Qualitative Variables. (5 marks)
 - ii) Deterministic vs. probabilistic Models (5 marks)
- b) Explain the assumptions under which binomial Distribution can be applied. (8 marks)
- c) In a singing competition, two judges assigned the following ranks for 7 candidates. Find the Spearman's rank correlation coefficient. (5 marks)

Competitor	1	2	3	4	5	6	7
Judge 1	5	6	4	3	2	7	1
Judge 2	6	4	5	1	2	7	3

- d) Briefly explain the qualities of a good estimator. (7 marks)

QUESTION TWO (25 MARKS)

- a) Describe the necessary conditions of a Chi-Square X^2 test. (15 marks)
- b) The following table gives the production of a company in three shifts and the number of defective goods that turned out in three weeks. Test at 5% level of significance whether weeks and shift are independence.

shift	1week	2weeks	3weeks	Total
i	15	5	20	40
ii	20	10	20	50
Iii	25	15	20	60
Total	80	30	60	150

(10 marks)

QUESTION THREE (25 MARKS)

- a) Discuss the main causes of non-sampling errors experienced in statistical research in business. (15 marks)
- b) A machine is designed so as to pack 200 ml of a medicine with a standard deviation of 5ml. A sample of 100 bottles, when measured, had a mean content of 201.3ml. Using 5% level of significance, test whether the machine is functioning properly. (10 marks)

QUESTION FOUR (25 MARKS)

- a) Explain the following terms as used in probability theory: (9 marks)
- i) Equi-probable events
 - ii) . Mutually exclusive events
 - iii) . Stochastic experiment
- b) The probabilities that drivers A,B and C will drive home safely after consuming liquor are $\frac{2}{5}$, $\frac{3}{7}$ and $\frac{3}{4}$ respectively. What is the probability that all will drive home safely after consuming liquor? (6 marks)
- c) The income distribution of workers in a certain factory was found to be normal with mean of Kshs 500 and standard deviation of Kshs50. There were 228 workers getting above 600. How many workers were there in all? (10 marks)

QUESTION FIVE (25 MARKS)

- a) Explain the various components of a time series data pattern. (15 marks)
- b) The following table gives data on sales and size of the students' population from a sample of 10 restaurants located near university campuses.

Restaurants	Quarterly sales (Kshs'000s)	Student Population ('000s)
1	58	2
2	105	6
3	88	8
4	118	8
5	117	12
6	137	16
7	157	20
8	169	20
9	149	22
10	202	26

- i) Compute the slope and the intercept of the estimated regression equation. (5 marks)
- ii) State the estimated regression equation. (2 marks)
- iii) Use the estimated regression equation to forecast quarterly sales for a new restaurant to be located near a campus with 16000 students. (3 marks)

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