



# KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

INSTITUTIONAL BASED PROGRAMME (IBP) DECEMBER 2016 SESSION  
EXAMINATION FOR THE DEGREE OF MASTER OF ARTS IN GEOGRAPHY  
AGE 802: ADVANCED QUANTITATIVE METHODS

DATE: Thursday, 24<sup>th</sup> August 2017

TIME: 9.00 a.m. - 12.00 p.m.

INSTRUCTIONS:

- (i) Answer **THREE** questions.
- (ii) Do not write on the question paper.
- (iii) USE sketch maps and diagrams wherever they serve to illustrate an answer.

**Question One**

- (a) As is commonly known, KIWI-birds are native to New Zealand. They are born exactly one foot tall and grow in one foot intervals. That is, one moment they are one foot tall and the next they are two feet tall. They are also very rare. An investigator goes to New Zealand and finds four birds. The mean of the four birds is 4, the median is 3, and the mode is 2. What are the heights of the four birds? **(5 marks)**
- (b) The following numbers of passengers were counted at certain depot in a series of 20 'spot checks'.

|     |     |     |     |
|-----|-----|-----|-----|
| 137 | 136 | 136 | 136 |
| 135 | 125 | 137 | 138 |
| 136 | 137 | 136 | 136 |
| 138 | 137 | 136 | 137 |
| 136 | 136 | 138 | 135 |

- (i) From the figures determine: the mean, the median and the mode. **(5 Marks)**
- (ii) What is the standard deviation of these data? **(5 Marks)**
- (iii) It was later discovered that the last observation should have been 35 instead of 135. Re-compute the three averages. What features of the three averages did your revised figures bring out? **(10 Marks)**

### Question Two

- (a) What do you understand by the term research hypothesis. (5 Marks)
- (b) Discuss the characteristics of a research hypothesis outlining the steps one can take to formulate one. (10 Marks)
- (c) Explain the procedure used to test hypotheses. (5 Marks)

### Question Three

- (a) Identify and describe the common methods of sampling. (10 Marks)
- (b) State the issues to consider when deciding on a sample size. (10 Marks)

### Question Four

- (a) An urn contains 8 white and 3 red balls. If two balls are drawn at random, find the probabilities that; both are white (ii) both are red (iii) one is of each colour. (10 Marks)
- (b) The probability that ken goes to Nakuru -  $\frac{1}{4}$ . If he goes to Nakuru, the probability that he will see a flamingo is  $\frac{1}{2}$ . If he does not go to Nakuru, the probability that he will see a flamingo is  $\frac{1}{3}$ . Find the probability that ken will:
- (i) Go to Nakuru and see a flamingo.
- (ii) Not go to Nakuru and yet he sees a flamingo.
- (iii) See a flamingo? (10 Marks)

### Question Five

Four varieties of potato are planted, each on five plots of same size and shape and each variety is treated with five different fertilizers. The results are as follows.

| Variety | Fertilizers |    |    |    |    |
|---------|-------------|----|----|----|----|
|         | 1           | 2  | 3  | 4  | 5  |
| 1       | 19          | 22 | 26 | 18 | 21 |
| 2       | 25          | 19 | 23 | 26 | 23 |
| 3       | 17          | 19 | 22 | 20 | 21 |
| 4       | 21          | 18 | 25 | 23 | 24 |

Perform an analysis of variance and show whether there is any significant difference between the yields of different varieties or due to different fertilizers at 1% level of significance.

(20 Marks)