



# **MASENO UNIVERSITY**

## **UNIVERSITY EXAMINATIONS 2017/2018**

### **FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF MASTER OF ARTS IN RESEARCH AND PUBLIC POLICY**

#### **CITY CAMPUS**

#### **DPP 802: QUANTITATIVE RESEARCH METHODS FOR PUBLIC POLICY**

Date: 4<sup>th</sup> March, 2018

Time: 2.00 - 5.00pm

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#### **INSTRUCTIONS:**

- Answer ANY THREE Questions
- Observe further instructions on the answer booklet



## QUESTION ONE

[20 Marks]

- (a) What is the Quantitative Techniques process? Give several examples of this process.  
(5 Marks)
- (b) Explain clearly the three meanings of the word 'Statistics' contained in the following statement  
:  
*"You compute statistics from statistics by statistics." (A.L. Bowley, 1901)*  
(5 Marks)
- (c) "Quantitative Techniques is a very powerful tool and analytical process that offers the presentation of optimum solutions in spite of its limitations". Critique this statement from your understanding of what a QT process is.  
(10 Marks)

## QUESTION TWO

[20 Marks]

- (a) A distribution of wages paid to foremen would show that, although a few reach very high levels, most foremen are at lower levels of the distribution. The same applies, of course, to most income distributions. If you were an employer, resisting a foreman's claim for an increase of wages, which average would suit your case? Give reasons for supporting your argument. Do you think your argument would be different in case you are a trade union leader?  
(10 Marks)
- (b) Student A appeared in three tests of the value of 20, 50 and 30 marks respectively. He obtained 75% marks in the first and 60% marks in the second test. What should be his percentage of marks in the third test in order that his aggregate is 60%?  
(5 Marks)
- (c) The following are the masses in grams to the nearest gram, of a sample of 10 eggs;  
46,51,48,62,54,56,58,60,71,75  
Calculate the standard deviation of the masses of this sample.  
(5 Marks)

### QUESTION THREE

[20 Marks]

(a) Explain the following terms as used in hypothesis testing:

- (i) Simple hypothesis
- (ii) Null hypothesis
- (iii) Size of a test
- (iv) power of a test
- (v) critical region

(10 Marks)

(b) A group promoting parents reading to their pre-school and primary school children approaches you for help with study design. They are beginning their programme by focusing on one District in Kenya. They want to find out:

The extent to which parents are reading to their children at present, where parents source the children's books they use, whether it is the mother or father who generally does the reading and what services might help to support parents reading to children.

The group wants to draw some conclusions from its research that will be valid for the entire District.

Write a short, concise and clear essay addressing the following:

- (i) Describe at least two qualitative research methods that would be useful in achieving the groups objectives.
- (ii) Give some basic principles on how these methods should be used.
- (iii) Since the group wants to make at least approximate generalizations from their study results to the entire District, give the group some guidelines on how qualitative research can be conducted so the results can be generalized.

(10 Marks)

## QUESTION FOUR

[20 Marks]

- (a) A school principal comes to you with a data set consisting of school KCSE exam marks from their school for individual students for the past 30 years along with the yearly summaries and the basic information about each student such as age, sex and university to which they were admitted if any. The data has just recently been computerised from the school records and you are the first person to handle it. You have been asked to help the school analyse their data. Describe how you would go about your initial data exploration and state what your next steps would be.

(10 Marks)

- (b) In the course you used various software packages to explore data, including Excel, R and SPSS. Discuss how modern software packages enable data exploration. State some advantages and disadvantages of the various packages you have used.

(10 Marks)

## QUESTION FIVE

[20 Marks]

- (a) Atul gets a pocket money allowance of Rs 12 per month. Thinking that this was rather less, he asked his friends about their allowances and obtained the following data which includes his allowance (in Rs) also.

12, 18, 10, 5, 25, 20, 20, 22, 15, 10, 10, 15, 13, 20, 18, 10, 15, 10, 18, 15, 12, 15, 10, 15, 10, 12, 18, 20, 5, 8.

He presented this data to his father and asked for an increase in his allowance as he was getting less than the average amount. His father, a statistician, countered pointing out that Atul's allowance was actually more than the average amount. Reconcile these statements.

(10 Marks)

- (b) Consider the population of all coyotes in the western U.S. The sample of that population that ranchers observe is largely the coyotes that prefer to live near a ranch; they also like to eat lamb.

The ranchers concluded that all coyotes are dangerous and got the government to assist in distributing a poison bait to reduce the overall coyote population. The overall population of coyotes was reduced, but the ranchers still lost almost as many sheep as before.

Why would this be the case?

- (i) Is the sample the ranchers observed a random sample?
- (ii) If not, is it safe to use the results to describe the entire population?
- (iii) Is the idea of reducing the size of the entire population justified based on the ranchers experience?

(10 Marks)

## QUESTION SIX

[20 Marks]

- (a) A committee of 5 persons is to be formed out of 7 Indians and 5 Japanese. Find the probability that (a) the committee is represented only by the Indians, (b) there are at least two Japanese on the committee, (c) there are at least two Japanese and two Indians on the committee.

(10 Marks)

- (b) The proportion of male and female students in a class is found to be 1 : 2. What is the probability that out of 4 students selected at random with replacement, 2 or more will be females?

(10 Marks)