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MACHAKOS UNIVERSITY

University Examinations for 2022/2023 Academic Year

SCHOOL OF BUSINESS, ECONOMICS AND HOSPITALITY AND TOURISM MANAGEMENT

DEPARTMENT OF ECONOMICS

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF ECONOMICS AND FINANCE

BACHELOR OF ECONOMICS AND STATISTICS

BACHELOR OF ECONOMICS

EES 303: SAMPLE SURVEY

DATE: **TIME:**

INSTRUCTIONS:

1. Answer question ONE and any other TWO questions
2. Question ONE Carries a total of 30 marks, while all other questions carry 20 marks each
3. Being in possession of mobile phone and/or unauthorized electronic gadget constitutes an exam irregularity.
4. Being in possession of written materials, in exam room, in any form constitutes an exam irregularity.
5. Do not write on question paper

QUESTION ONE (COMPULSORY 30 MARKS)

a) A professor conducts a telephone survey of a city's population by drawing a sample of numbers from the phone book and having her student assistants call each of the selected numbers once to administer the survey. What are some sources of bias with this survey? (6 marks)

b) Define the following terms as used in non-probability sampling methods

i) Purposive sampling (2 marks)

ii) Convenience sampling (2 marks)

iii) Quota sampling (2 marks)

c) Give four advantages of stratified sampling (4 marks)

d) Calculate the sample size for a population of 100000. Take confidence level as 95% and margin of error as 5%.

Given: Z score= 1.960, standard deviation = 0.5, Margin of error = 0.05 (4 marks)

e) State and explain four causes of systematic bias in sampling (4 marks)

f) A store manager kept track of the number of newspapers sold each week over a seven-week period. The results were as follows:

81 71 202 113 269 248 242

Find the 5-number summary for the data. Is the data discrete or continuous? (6 marks)

QUESTION TWO (20 MARKS)

a) Non-sampling error can occur at every stage of the planning or execution of census or sample survey. Discuss the factors that lead to arising of non-sampling errors. (8 marks)

b) Suppose that we have a population of size N=4 whose population units are 1,2,3,4 and that we require a sample of size n=2 from the population. Assuming we use simple random sampling without replacement (SRSWOR). Find the number of possible samples and the probability of selecting each sample and specify the samples. (8 marks)

c) Discuss the conditions necessary for sample survey (4 marks)

QUESTION THREE (20 MARKS)

a) State and explain four factors to consider when determining the sample size of a population in research. (4 marks)

b) Discuss the advantages of sampling over complete census method. (6 marks)

c) Show that in simple random sampling without replacement. The sample mean is an unbiased estimator of the population mean E(y) = $\bar{Y}$ (4 marks)

d) Suppose the following summarized information is made available

n=25,N=275,x =92,y =2.6, $xi2$=2200, $x2yi$=500,25i=125i=1 $yi2$=17025i=1 Estimate R and Var(R) (6 marks)

QUESTION FOUR (20 MARKS)

a) For obtaining the unbiased and real result by a sampling method, a sample should have the following factors. Discuss (8 marks)

b) Consider a drug used to help prevent blood clots in certain patients. In clinical trials, among 5750 patients treated with this drug, 153 developed the adverse reaction of nausea. Use a 0.10 significance level to test the claim that less than 3% of users develop nausea.

(i) Identify the null and alternative hypotheses for this test. (3 marks)

(ii) Identify the test statistic for this hypothesis test. (3 marks)

(iii) Identify the P-value for this hypothesis test. (3 marks)

iv) Identify the conclusion for this hypothesis test. (3 marks)

QUESTION FIVE (20 MARKS)

a) Discuss the main steps involved in the planning and execution of a sample survey (10 marks)

b) In a survey, 1465 internet users chose to respond to this question posted on a newspaper's electronic edition:

Is news online as satisfying as print and TV news?

52% of the respondents said yes.

(i) Determine whether the study is an experimental or an observational study. (2 marks)

(ii) Identify the sample and the population. (3 marks)

(iii) Is the value 52% a statistic or a parameter? Explain (3 marks)

(iv) Identify a major problem with the study. (2 marks)