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OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2021 /2022 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER REGULAR EXAMINATION

FOR THE DEGREE OF BACHELOR OF SCIENCE IN APPLIED STATISTICS

COURSE CODE: STA 113

COURSE TITLE: PRINCIPLES OF SAMPLE SURVEYS

DATE: 2ND JUNE, 2022 **TIME: 9AM – 12 NOON**

INSTRUCTION TO CANDIDATES

- SEE INSIDE

THIS PAPER CONSISTS OF 3 PRINTED PAGES PLEASE TURN OVER

REGULAR – MAIN EXAM

STA 113: PRINCIPLE OF SAMPLE SURVEY

STREAM: BSC (Applied Statistics) **DURATION: 3 Hours**

INSTRUCTIONS TO CANDIDATES

i. *Answer ALL questions from section A and ANY THREE Questions in section B.*
ii. *All questions in section B carry Equal Marks.*
iii. *Do not write on the question paper.*

SECTION A (31 marks): Answer ALL questions

QUESTION ONE (16MKS)

a) Define the term population and describe the different types of populations. (6 Marks)

b) Define a sample and describe the conditions for sample survey briefly. (6 Marks)

c) Define the following terms (4 Marks)

i. Sample
ii. Sample design
iii. Sample Unit
iv. Unit of analysis

QUESTION TWO (15 Marks)

a) Describe the three basic principles of sample survey (6 Marks)
b) Distinguish between the sampling and non-sampling Error (4 Marks)
c) Distinguish between probability sampling and non-probability sampling listing examples in each category (5 Marks)

SECTION B (39 MARKS, CHOOSE ANY THREE QUESTIONS)

QUESTION THREE (13 MARKS)

a. Discuss the principles steps involved in the planning and execution of a sample survey of sample surveys. (10 Marks)

b. Discuss 3 main factors of sampling error (3 Marks)

QUESTION FOUR (13 Marks)

a. Describe the advantages of sampling over census. (8 Marks)

b. Discuss Merits of probability sampling (5 Marks)

QUESTION FIVE (13 Marks)

a) A population is divided into three strata so that $N1 = 5000$, $N2 = 2000$ and $N3 = 3000$. Respective standard deviations are: $\sigma_1 = 15$, $\sigma_2 = 18$ and $\sigma_3 = 5$. How should a sample of size $n = 84$ be allocated to the three strata, if we want optimum allocation using disproportionate sampling design? (8 Marks)

b) The following are the number of departmental stores in 15 cities: 35, 17, 10, 32, 70, 28, 26, 19, 26, 66, 37, 44, 33, 29 and 28. If we want to select a sample of 10 stores, using cities as clusters and selecting within clusters proportional to size, how many stores from each city should be chosen? (Use a starting point of 10). (5 Marks)

QUESTION SIX (13 Marks)

a) Discuss 5 merits and 5 demerits of stratified sampling (10 Marks)

b) Discuss 3 factors leading to non-sampling errors (3 Marks)

QUESTION SEVEN (13 Marks)

a) Discuss snowball as a sampling method and further elaborate its advantages and disadvantages (10 Marks)

b) Describe census and situations where it is essential (3 Marks)

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