



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 $N_1 = 5000$, $N_2 = 2000$ and $N_3 = 3000$. 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)
