EGERTON UNIVERSITY

UNIVERSITY EXAMINATIONS

REGULAR -NJORO CAMPUS

FIRST SEMESTER, 2023/2024 ACADEMIC YEAR

THIRD YEAR CAT FOR THE DEGREE OF BACHELOR OF SCIENCE IN NATURAL RESOURCE MANAGEMENT

NARE 352: ECOLOGICAL SURVEYS AND TECHNIQUES

STREAM: BSc TOHM(Y3S2), BSc ENSCI(Y2S2) **TIME: 1 HR**

EXAMINATION SESSION: 27TH FEBRUARY **YEAR: 2024**

INSTRUCTIONS:

(i) Answer ALL questions in Section A and any two questions in section B

(ii) Do not write on the question paper

(iii) Answer questions clearly and concisely.

Question One

Define the following terms as applied in ecological surveys:

i). Sampling frame
ii). Sample size
iii). Precision
iv). Replication
v). Systematic sampling (5 Marks)

Question Two

Define reverse planning and outline four reasons for proper planning prior to embarking on an ecological survey. (5 Marks)

Question Three

Briefly describe any four basic principles of sampling. (8 Marks)

Question Four

Describe four ways of presenting ecological data. (6 Marks)

Question Five

The table below shows the counts of trees across twelve 10mn by 10m plots placed randomly across a study site measuring 100ha. From the data, estimate:

i). The mean number of trees per plot (1Mark)
ii). The standard error of the mean (2 Marks)
iii). The 95% confidence limits of the mean. (3 Marks)

Plot ID	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Count	4	6	5	7	3	2	8	6	5	5	7	6

Formulae:

$$s = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(x_i - \bar{x})^2}$$

$$s_{\bar{x}} = \sqrt{s^2(1 - m/M)/m}$$

Table of the Student's *t*-distribution

Table of the Student's/-distribution

ν \ α	0.1	0.05	0.025	0.01	0.005	0.001	0.0005
1	3.078	6.314	12.076	31.821	63.657	318.310	636.620
2	1.886	2.920	4.303	6.965	9.925	22.326	31.598
3	1.638	2.353	3.182	4.541	5.841	10.213	12.924
4	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	1.341	1.753	2.131	2.602	2.947	3.733	4.073