



MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR IN ENVIRONMENTAL SCIENCES

ERC 215: NATURAL RESOURCE MAPPING AND CARTOGRAPHY

DATE: 27/9/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS:

Answer question one and two other questions

QUESTION ONE:

The data in table below were collected from Kiambu County. Use the data to answer the questions which follow;

Sample no.	X	Y	Improper disposal of waste (%)	Improper use of pesticides (%)	Improper use of fertilizers (%)	Water pollution (%)
1	38.01°	-0.06°	11	3	13	15
2	38.13°	-0.08°	7	7	12	17
3	38.16°	0.07°	4	9	10	11
4	38.01°	0.09°	9	10	20	16
5	38.08°	-0.01°	8	4	15	18

(a) Convert the coordinates into decimal degree-minute-second format (10 marks)

(b) Suggest the problem to be investigated (2 marks)

(c) What are the possible causes of the problem? (3 marks)

- (d) Describe how you would organize the data to pose a satisfactory GIS query (7 marks)
- (e) Formulate a satisfactory GIS query (4 marks)
- (f) Give the possible answer (4 marks)

SECTION B: 40 MARKS

QUESTION TWO:

Discuss how GIS technology can be applied to enhance agricultural activities in Machakos County (20 marks)

QUESTION THREE:

Use the data below to answer the questions which follow.

Table (a)

Shape	County	Sub-county	Soil erosion (%)	Deforestation (%)
point	Machakos	D	20	15
point	Machakos	F	30	20
point	Machakos	H	40	10

Table (b)

shape	county	Sub-county	Soil erosion (%)	Deforestation (%)	Poor tillage (%)
point	Makueni	L	15	20	17
point	Makueni	N	20	25	19
point	Makueni	P	10	15	21

Table (c)

shape	county	Rainfall intensity	Topography
polygon	Machakos	Very high	steep
polygon	Makueni	high	Very steep

Table (d)

shape	county	Sub-county	Poor tillage (%)
point	Machakos	F	15
point	Machakos	H	30
point	Machakos	D	20

Table (e)

shape	county	Sub-county	Soil erosion (%)	Deforestation (%)	Poor tillage (%)
point	Makueni	S	20	18	12
point	Makueni	R	15	30	10

- (a) Suggest the problem to be investigated (1 mark)
- (b) What are the possible causes of the problem? (3 marks)
- (c) Describe how you would organize the data to pose a satisfactory GIS query (10 marks)
- (d) Formulate a satisfactory GIS query (6 marks)

QUESTION FOUR:

Discuss how GIS technology can be applied to enhance livestock farming in Wajir County
(20 marks)

QUESTION FIVE:

The data below were collected from Nakuru County. Use the data to answer the questions which follow;

Sample no.	Burning of agricultural wastes (%)	Deforestation (%)	Release of methane gas (%)
1	18	26	5
2	17	27	7
3	14	24	9
4	19	22	2
5	16	24	4

- a) Suggest the problem to be investigated (2 marks)
- b) What are the possible causes of the problem? (3 marks)
- b) Describe how you would organize the data to pose a satisfactory GIS query (5 marks)
- c) Formulate a satisfactory GIS query (7 marks)
- d) Give the possible answer (3 marks)