MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
ACADEMIC YEAR 2022/2023
FIRST YEAR SECOND SEMESTER

SCHOOL OF PURE, APPLIED AND HEALTH SCIENCES
DIPLOMA IN CRIMINOLOGY

COURSE CODE: CRM 103
COURSE TITLE: QUANTITATIVE SKILLS II

DATE: 18/4/2023 **TIME: 1430-1630 HRS**

INSTRUCTIONS

1. Answer question ONE and any other TWO questions from section II
2. Question one is compulsory

Section A, COMPULSORY

QUESTION ONE (30 marks)

(a) Construct a frequency distribution table for the following data (5mks)

8 4 6 7 9 6 3 8 7
10 7 5 8 7 7 7 2 6
9 1 5 6 4 8 7 8 10
7 8 6 5 6 5 4 5 4
3 5 9 7 5 2 6 7 5

(b) Consider the following sets

A ={1,2,3}, B = {1,3,5,6} and C={2,4,6}

(i) A ∪ B (3mks)

(ii) A ∩ B (2mks)

(c) Consider the universal set U= {1,2,3,4,5,6,7} and A ={1,3,6}. Find A^c (3mks)

(d) The following data represent skin colours of some students. Represent them in a bar graph (5mks)

Colour	Black	Brown	white	chocolate
Number of students	15	10	20	5

(e) The probability of passing KCSE examination depends on the performance in school mock exam. If the candidate passes the mock exam, the probability of passing KCSE is $\frac{4}{5}$. If the candidate fails mock exam, the probability of passing KCSE is $\frac{3}{5}$. If a candidate passes KCSE, the probability that he will be employed is $\frac{5}{8}$. If he fails the probability of getting employed is $\frac{1}{3}$. The probability of passing mock exam is $\frac{2}{3}$

i. Draw a well labeled tree diagram to represent the above information (5mks)

(f) Consider the following data set

5,3,4,2,4,7,2,3,4,9,4,5

i. Calculate

a. Mean (3mks)

b. Variance (3mks)

c. Mode (1mk)

SECTION B, ANSWER ONLY TWO QUESTIONS

QUESTION TWO

(a) In a livestock research station, a new drug for a certain fowl disease is being tried. A sample of 36 fowls was diagnosed to have the disease. Twenty (20) fowls were treated with the drug and the rest were not. Calculate the probability that a fowl picked at random is

(i) Treated with the drug (1mks)

(ii) Not treated with the drug (1mks)

(b) If a fowl is treated, the probability of dying is $\frac{1}{10}$ while if not treated the probability is $\frac{7}{10}$. Calculate the probability that, a fowl picked at random from the 36 fowls is

(i) Treated with the drug and will die (2mks)

(ii) Not treated with the drug and will die (2mks)

(iii) Treated with drug and will not die (2mks)

(iv) Not treated with the drug and will not die (2mks)

(c) The probability that a pupil goes to school by a boda-boda is $^2/_3$ and by a matatu is $^1/_4$. If he uses a bodaboda the probability that he will be late is $^2/_5$ and if he uses a matatu the probability of being late is $^3/_{10}$. If he uses other means of transport the probability of being late is $^3/_{20}$

(i) Draw a tree diagram to represent the information (3mks)

(ii) Find the probability that he will be late for school (3mks)

(iii) Find the probability that he will be late for school if he does not use matatu (2mks)

(iv) What is the probability that he will not be late for school (2mks)

QUESTION THREE

(a) Consider the following data

Classes	90−94	95−99	100−104	105−109	110−114	115−119	120−124
Frequency	12	4	14	8	6	4	2

(i) Construct a cumulative frequency curve for the data above (5mks)

(ii) Construct a frequency polygon for the data above (5mks)

(iii) Consider the total population of animals in a farm given as 2100. Out of these 800 are chicken, 200 are cows, 300 are goats, 700 are sheep and 100 are ducks. Represent the information on a pie chart (10mks)

QUESTION FOUR (20 marks)

(a) The data below illustrate the distribution of wages of employees in a certain company. Use it to answer the following questions. (20mks)

Wages	Frequency
50 – 56	4
57 – 63	7
64 – 70	8
71 – 77	5
78 – 84	10
85 – 91	7
92 – 98	9

Calculate

(i) State the modal class

(ii) Arithmetic mean

(iii) Mode

(iv) Median

(v) Variance

(vi) Standard deviation

QUESTION FIVE (20 marks)

b. Make a frequency distribution table for the following data using five classes (5mks)

5 10 7 19 25 17 15 7 6 8

17 17 22 21 7 7 24 5 6 5

b. Evaluate (3mks)

$$\frac{9!}{2!\times 7!}$$

c. What is the value of? (3mks)

$${}^{8}C_{3}$$

d. If A is a set of odd numbers less than 20 and B is a set prime numbers less than 10. Find A-B (4mks)

e. Define the following terms (6mks)

I. Set
II. Singleton set
III. Frequency
IV. Pie chart
V. A cumulative frequency curve
VI. Probability

//END//