KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF THE DIPLOMA IN AGRICULTURAL AND APPLIED ECONOMICS SECOND SEMESTER, 2023/2024 (JANUARY-APRIL, 2024)

AGEC 0112: STATISTICS FOR ECONOMISTS

STREAM: Y1 S2   **TIME: 2 HOURS**

DAY: TUESDAY, 12:00 – 2:00 P.M.   **DATE: 16/04/2024**

INSTRUCTIONS
1. ***Do not write anything on this question paper.***
2. ***Question ONE Is Compulsory and Attempt Any Other TWO Questions.***

QUESTION ONE

(a) (i) If two events are mutually exclusive, then they are always complimentary. Giving relevant examples comment on this statement.

(4marks)

(b). Differentiate the following terms;
i.	Random variable and probability distribution	(2marks)
ii.	Outcome and event	(2marks)
iii.	Permutation and combination	(2marks)
iv.	Descriptive and inferential statistics	(2marks)

(c) From the following data showing the heights of students of Kisii University:
13, 35, 46, 87, 56, 78, 48, 45, 24, 35, 44, 84, 12, 15, 86, 56

Find the value:
i.	Range	(2marks)
ii.	Quartile Range	(3 marks)
iii.	Median	(3marks)

(d) A wholesale stationer stocks heavy (2B), medium (HB), fine (2H) and extra fine (3H) pencils which come in packs of 10. Currently, in stock are 2packs of 3H, 14 packs of 2H, 35 packs of HB and 8 packs of 2B. if a pack of pencils is chosen randomly for inspection; required:

What is the probability that they are:
i.	Medium	(2marks)

ii. Heavy (2marks)
iii. Not very fine (3marks)
iv. Neither heavy nor medium (3marks)

QUESTION TWO

a. Department of Agricultural Economics from Kisii University wants to elect their representatives. In this election, a committee of 4 must be chosen from 3 women and 4 men.

Required:

Calculate:
i. In how many ways the committee can be chosen. (3marks)
ii. In how many ways 2 men and 2 women can be chosen. (4marks)
iii. Probability committee consist of 2 men and 2 women. (3marks)
iv. Probability that committee consist of **at least** 2 women. (3marks)

(b) Determine the parameters of a binomial distribution whose mean is 120 and the standard deviation is 7. (7marks)

QUESTION THREE

The following information was obtained from an NGO which was giving small loans in Kisii town:

	Frequency
1600-1800	25
1800-2000	32
2000-2200	46
2200-2400	58
2400-2600	40
2600-2800	30
2800-3000	7

Calculate
i. Mean (3marks)
ii. Mode (4marks)
iii. Median (4marks)
iv. Variance (4marks)
v. Interquartile range (4marks)
vi. Standard Deviation (1mark)

QUESTION FOUR

(a) Discuss the properties of normal distribution (8marks)

(b) A medical survey was conducted to establish the proportion of Kisii University student population which was infected with laziness syndrome. The results indicated that 30% of the population was suffering from the syndrome. A sample of 8 students was later taken and sampled for the disease. Assuming the experiment followed binomial distribution, find the probability that;
i. Only one student had the disease (3marks)
ii. Exactly two students had the disease (3marks)
iii. At most 3 students had the disease (3marks)
iv. At least 2 students had the disease (3marks)