UNIVERSITY OF SWAZILAND

FINAL EXAMINATION

(Total Marks: 100)

PROGRAMME: :   B.Sc. ABE YEAR 2

:   B.Sc. AG. ECON. & AGBMGT YEAR 2

:   B.Sc. AG. EDUC. & EXT. YEAR 2

:   B.Sc. AGRON. YEAR 2

:   B.Sc. ANI. SCI. YEAR 2

:   B. Sc. ANI. SCI. (DAIRY) YEAR 2

:   B.Sc. COS YEAR 2

:   B.Sc. COS. ED. YEAR 2

:   B.Sc. FSNT YEAR 2

:   B.Sc. HORT. YEAR 2

:   B.Sc. TADM YEAR 2

PAPER   :   **AEM 201**

TITLE OF PAPER   :   **ELEMENTARY STATISTICS**

TIME ALLOWED   :   **TWO (02) Hrs.**

INSTRUCTIONS

1. ANSWER **ALL** QUESTIONS IN **ALL** SECTIONS (A, B & C)

2. QUESTIONS CARRY MARKS AS INDICATED IN THIS PAPER.

3. USE ANSWER SHEET FOR **ALL** QUESTIONS.

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR.

SECTION – A
(Marks: 30)

I. Fill in the blanks (Only write the answers)   (Total Marks: 10, 02 marks each)

a. The strength of students in 7 colleges are 1285, 1845, 1648, 2035, 1685, 2970, 2115, then the median strength is ....

b. Fill the correct missing value, Mode = (------- x Mean + ------ Median)

c. .... is/are affected by extreme observations in measures of central tendency.

d. The most suitable measure of Dispersion is ....

e. In a normal distribution the Mean, Median and Mode are ....

II. Select and Write the correct answer   (Total Marks: 20, 02 marks each)

1. Which statistic is/are not much affected by extreme values?

[a] Arithmetic Mean   [b] Median   [c] Geometric Mean   [d] Standard Deviation
[e] a & b   [f] c & d   [g] None of these

2. If the average of ten values is 70 and the nine of the values are 58, 72, 79, 56, 45, 96, 88, 70 and 66 then the tenth value will be

[a] 70   [b] 75   [c]   65   [d] 80   [e] None of these

3. Given the following nine observations 5, 6, 10, 9, 7, 8, 6, 6 and 8, then the 6 is ---------
of those observations?

[a] Mean   [b] Variance   [c] Mode   [d] Range [ ]   [e] None of these

4. The sum of the squares of deviations is the least or zero when measured from

[a] Median   [b] Mean   [c] Mode   [d] Zero   [e] One   [f] None of these

5. The coefficient of correlation will be zero when

[a] X is increasing, Y is decreasing   [b] Y increasing and X is decreasing
[c] Both X and Y is decreasing   [d] No change in X and Y   [e] None of these

6. A selection procedure of a sample having no involvement of probability is known as

[a]. Purposive sampling   [b]. Stratified sampling   [c]. Systematic sampling
[d]. Random sampling   [e]. None of these

7. Which one is a property of Binomial distribution?

[a]. Probability p is large   [b]. No. of trials are infinite   [c]. Mean = Variance
[d]. Probability (p) = 0   [e]. None of these

8. If A and B are dependent events then P (A U B) is equal to

[a]. P(A) x P(B) - P (A ∩ B)   [b]. P(A) + P(B)   [c]. P(A) – P(B)
[d]. P(A)+P(B)- P (A ∩ B)   [e]. None of these

9. Which one is a property of Poisson probability distribution?

[a]. Probability p is large   [b]. No. of trials are finite   [c]. Mean = Variance
[d]. Probability (p) = 0   [e]. None of these

10. If each and every unit of the population has equal chance of being included in the sample, it is known as

[a]. Random sampling   [b]. Purposive sampling   [c]. Systematic sampling
[d]. Simple random sampling [e]. None of these

SECTION- B
(Total Marks: 50)

1. Find out the Mean Deviation of the following distribution

(Marks: 10)

Wages (in $)	20-30	30-40	40-50	50-60	60-70
No. of workers	04	07	20	10	09

2.

The ranks of same 15 students allotted by two judges are as follows.   (Marks: 10)

Judge I	:	1 2 4 3 5 6 7 8 9 10 12 11 13 14 15
Judge II	:	3 10 1 4 5 7 2 6 8 11 15 9 14 12 13

Calculate the rank correlation coefficient.

3.

(i) Explain the Additive & Multiplicative law of probability for two events (A & B), if events are dependent.   **(Marks: 04)**

(ii) Find the probability of winning a new car from a lottery which prizes contains 7 local old, 5 new and 3 imported used cars.   **(Marks: 03)**

(iii) A committee of 3 persons is to be selected from a group of 07 men and 05 women. If the selection is made randomly, find the chance that there are 2 men and 1 women.

(Marks: 05)

(iv) Mr. Dlamini appears for an interview for two posts Grade A and Grade B for which selection is independent. The probability of his selection for post Grade A is (1/12) and for Grade B, it is (1/15). Find the probability that Mr. Dlamini is selected for both posts.

(Marks: 03)

4.

From the following table showing the number of plants having certain characters, test the hypothesis that the flower color is independent of the shape of the leaf.   **(Marks: 15)**

Flower Color	Flat leaves	Curled leaves	Totals
White flowers	95	40	135
Red flowers	20	05	25
Total	115	45	160

(Tabulated value of Chi-square is 3.84 at 5% level of significance)

SECTION- C
(Total Marks: 20)

1. Samples of two types of electric light bulbs were tested for length of life and following data were obtained. **(Marks: 10)**

	Sample Size.	Sample Mean	Sample Standard deviation
Type I	8	1234 Hrs.	36 Hrs.
Type II	8	1186 Hrs.	29 hrs.

Is the difference in the means sufficient to warrant that type I is superior to type II regarding length of life?

2. Write the short notes on any **TWO**   **(Total Marks: 10, 05 marks each)**

(i) Normal Distribution

(ii) Maximum Likelihood Estimator.

(iii) Systematic Random Sampling.

(iv) Level of Significance.