



UNIVERSITY OF SWAZILAND
SUPPLEMENTARY 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		<ol style="list-style-type: none"> 1. ANSWER <u>ALL</u> QUESTIONS IN <u>ALL</u> SECTIONS (A, B & C) 2. QUESTIONS CARRY MARKS AS INDICATED IN THIS PAPER. 3. USE ANSWER SHEET FOR <u>ALL</u> QUESTIONS.

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

SECTION – A
(Marks: 30)

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

- i. In a normal distribution the Mean, Median and Mode are
- ii. Fill the correct missing value, Median = (----- x Mean + ----- Mode)
- iii. is/are not affected by extreme observations in measures of central tendency.
- iv. The most suitable measure of dispersion is
- v. In a Poisson distribution the Mean and Variance are

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

1. Which statistic is/are much affected by extreme values?

- [a] Mode [b] Median [c] Mean [d] St. Deviation [e] a & b
[f] c & d [g] None of these

2. If the mean of ten values is 70 and the nine of the values are 48, 72, 79, 56, 45, 96, 88, 75 and 66 then the tenth value will be

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

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

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

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

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

5. The coefficient of correlation will have negative sign when

- [a] X is increasing, Y is decreasing [b] Both X and Y are increasing
[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 involvement of probability is known as

- [a]. Purposive sampling [b]. Systematic sampling [c]. Subjective sampling
[d]. Judgment sampling [e]. None of these

7. 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

8. If A and B are independent events then $P(A \cup B)$ is equal to

- [a]. $P(A) + P(B) + P(A \cap B)$ [b]. $P(A) + P(B)$ [c]. $P(A) - P(B)$
[d]. $P(A) + P(B) - P(A \cap B)$ [e]. None of these

9. Which of the following can never be negative value?

- [a]. Probability [b]. Median [c]. Mean [d]. Correlation Coefficient
[e]. Standard Deviation [f]. None of these

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

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

SECTION- B (Total Marks: 40)

1. The marks of same 08 students in Statistics (X) and Mathematics (Y) are as follows.
(Marks: 10)

Statistics(X)	:	65	66	67	67	68	69	70	72
Mathematics(Y)	:	67	68	65	68	72	72	69	71

Average Marks of Statistics is 68 and Average Marks of Mathematics is 69. Calculate the correlation coefficient for proficiencies of these subjects Statistics and Mathematics.

2. A shop owner recorded the daily turnover in (US\$) of his outlet for 300 trading days shown in the frequency table given below

Daily Turn Over	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of Days	20	23	45	87	60	50	15

a. Find out the average turnover of the shop (Marks: 05)

b. Find out the standard deviation of the distribution (Marks: 05)

3.

(i)

Two balls are drawn from a bag containing 5 red and 7 white balls, find the probability that they both (balls) will be white. (Marks: 05)

(ii)

Mr. Khumalo 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 $(1/13)$ and for Grade B, it is $(1/11)$. Find the probability that Mr. Khumalo is selected for at least one post. (Marks: 05)

4. Two kinds of fertilizer were applied to 20 plots of equal size; other conditions are the same. The yields (in quintals) are given below (Marks: 10)

Fertilizer-A	19	22	18	20	21	20	20	23	20	17
Fertilizer-B	20	19	21	17	20	18	17	23	16	19

$(t_{\text{tab},05\%} = 2.086 \text{ and } t_{\text{tab},01\%} = 2.845)$

Examine the significance of the difference between the mean yields due to the application of different kind of fertilizer. $(t_{\text{tab},05\%} = 2.086 \text{ and } t_{\text{tab},01\%} = 2.845)$

SECTION- C
(Total Marks: 30)

1. Match and Write the following

(Marks : 10, 02 marks each)

- | | | |
|--------------------------|-----|------------------------------------|
| i. Binomial Distribution | [a] | $1 - [6 \sum D_i^2 / N(N^2 - 1)]$ |
| ii. Poisson Distribution | [b] | $\sum [(O_i - E_i)^2 / E_i]$ |
| iii. Rank Correlation | [c] | $[\sum (x_i - \mu)^2] / \sum f_i$ |
| iv. Variance | [d] | $\exp^{-\lambda} \lambda^x / x !$ |
| v. Chi-Square Test | [e] | ${}^n C_r \cdot p^r \cdot q^{n-r}$ |

2. Samples of two types of electric tube light A and B were tested for length of life and following data were obtained.

(Marks: 05)

	Sample Size.	Sample Mean	Sample Standard deviation
Tube Light A	10	55 Days	42.8 Days
Tube Light B	10	48 Days	25.4 Days

Explain which electric tube has the greater relative variation?

3. Write short answer on any **THREE** of the following:

(Total Marks: 15, 05 marks each)

- (i) Explain the characteristics of good estimator.
- (ii) Describe the Stratified Random Sampling.
- (iii) Describe the diagrammatical presentation.
- (iv) Explain the advantages of non parametric test.
