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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 : **02 Hrs.**

INSTRUCTIONS 1. ANSWER QUESTIONS IN <u>ALL</u> SECTIONS

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

(Total marks: 30)

a. Write the letter of correct answer

Marks: 15 (03 marks each)

1. If the mean of ten values is 70 and the nine of the values are 68, 72, 79, 56, 45, 96, 88, 75 and 66 then the tenth value will be

[a] 70   [b] 65   [c] 55   [d] 80   [e] None of these

2. Given the following nine observations are 5, 9, 5, 7, 8, 5, 6, 9 and 10. Then 5 is the _____ of those observations?

[a] Mode   [b] Range   [c] Median   [d] a & b   [e] a and c   [f] b and c
[g] a, b & c   [h]None of these

3. If X and Y are independent events then P (X ∩ Y) is

[a] P(X)   [b] P(Y)   [c] P(X) + P(Y)   [d] P(X) – P(Y)   [e] P(X) x P(Y)
[f] None of these

4. A selection procedure of a sample having involvement of probability is known as

[a] Probability Sampling   [b] Stratified Sampling   [c] Systematic Sampling
[d] a & b   [e] a & c   [f] b & c   [g] a, b & c   [h] None of these

5. The coefficient of correlation will have positive sign when

[a] X is increasing, Y is decreasing   [b] Both X and Y are increasing
[c] X is decreasing, Y is increasing   [d] there is no change in X and Y
[d] None of these

b. Fill in the blanks   **Marks: 15 (03 marks each)**

a. The sum of the observations of series of individual observations from their arithmetic mean is always ....

b. The strength of 9 colleges in a city are 950, 485, 1648, 1345, 1835, 776, 2774, 2178 and 1835, then the Median will be ....

c. Select the correct missing value, Mean = ... (Mode – 3 Median)

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

e. In a regression line Y on X. The regression coefficient β_{yx} is --------------

SECTION- B
(Total Marks: 45)

1. A fish shop owner recorded the daily income in (US$) of his outlet for 300 trading days shown in the frequency table

Daily Income	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Days	10	45	50	90	60	20	25

a. Find out the Median income of the fish shop   **(Marks: 05)**

b. Find the variance of the average income (**By using Short cut method**)   **(Marks: 10)** ·

2. (i) Find the probability of drawing a red ball from a bag which contains 5 white, 7 red and 3 black balls.

(Marks: 05)

(ii) A committee of 5 persons is to be selected from a group of 8 men and 6 women. If the selection is made randomly, find the chance that there are 3 men and 2 women.

(Marks: 05)

(iii) Mr. Dlamini appears for an interview for two posts Grade1 and Grade2 for which selection is independent. The probability of his selection for post A is (1/7) and for B, it is (1/11). Find the probability that Mr. Dlamini is selected for both posts. **(Marks: 05)**

3. Two kinds of fertilizer were applied to 22 plots of equal size; other conditions are the same. The yields (in quintals) are given below   **(Marks: 15)**

Type-I	24	19	22	18	20	22	20	20	23	20	17
Type-II	23	20	19	21	18	20	18	17	23	16	19

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

OR

Find the correlation coefficient of the marks of two subjects Physics (**X**) and English (**Y**) in the examination. Observations are given below   **(Marks: 15)**

S.N0.	1	2	3	4	5	6	7	8	9	10 ·
X	77	54	27	52	14	35	90	25	56	60
Y	35	58	60	40	50	40	35	56	34	42

SECTION- C

(Total Marks: 25)

1. Match and Write the following   **Marks: 10 (02 marks each)**

    [a] Binomial Distribution   [1] $[\text{St. Dev.} (\sigma)/ \text{Mean}(\mu)]100$

    [b] Poisson Distribution   [2] $\Sigma [(O_i - E_i)^2 / E_i]$

    [c] Coefficient of Variation   [3] $\text{SQRT.} [\Sigma (x - \mu)^2] / n$

    [d] Standard Deviation   [4] $e^{-\lambda} \lambda^x / x!$

    [e]Chi-Square Test   [5] $^{n}C_r \cdot p^r \cdot q^{n-r}$

2. Short Notes (Any Three)

Marks: 15 (05 marks each)

    (i) Describe the demerits of arithmetic mean.

    (ii) Explain the properties and assumptions of Poisson distribution.

    (iii) Stratified Random Sampling with Proportional allocation.

    (iv)Advantages of Non parametric test.

    (v) Describe the criteria of good estimator.