BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE

MFS 502

Department of Agricultural Economics, Education and Extension
MSc in Food Security and Sustainable Agriculture Part I Examination
APPLIED STATISTICS

5 - DEC 2021

3 HOURS (100 Marks)

INSTRUCTIONS TO CANDIDATE
Answer question **ONE** from **SECTION A** and any **TWO** questions from **SECTION B**.

SECTION A (COMPULSORY)

1. Table 1 gives per capita income to the nearest $100 (Y) and the percentage of the economy represented by agriculture reported by the World Bank in 1999 for 15 African countries.

SI	Yi	Xi
1	6	76
2	10	16
3	44	9
4	47	8
5	23	14
6	19	11
7	13	12
8	19	11
9	8	18
10	44	5
11	4	26
12	31	8
13	24	8
14	59	9
15	37	5

a) Estimate α and β [10 marks]

b) Test at 5% level the statistical significance of β. [10 marks]

c) Comment on the coefficient of determination. [10 marks]

d) Report the results obtained in part (a) in standard summary form [15 marks]

e) Advise policy makers guided by your regression results [5 marks]

SECTION B

2. Consider a regression model relating Y to X, $Y_i = \beta_0 + \beta_1 X_i + e$, where e is the error term. Suppose the estimated regression equation is stated as $Y_i = \beta_0 + \beta_{1hat} X_i + \varepsilon$

a) Define e [2marks]

b) Explain how e is related to ε [3 marks]

c) Explain four reasons for the inclusion of ε in the population regression function. [20 marks]

3. Non-parametric tests are better than parametric tests. Discuss [25 marks]

4. Explain the components of time series. [25 marks]

END OF PAPER