

BINDURA UNIVERSITY OF SCIENCE EDUCATION
FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE

AGM 213

Department of Agricultural Economics, Education and Extension
BSc Agricultural Science (Honours) Part II Examination
ECONOMETRICS

3 HOURS (100 Marks)

NOV 2017

INSTRUCTIONS

Answer any **FOUR** questions. Each question carries **25 marks**.

1. Consumer demand theory states that the quantity demanded of a commodity is a function of, or depends on its price, consumer's income and the price of other (related) commodities, say, commodity Z (i.e., P_Z). With reference to the consumer demand theory, discuss steps that are applied in econometric research.
[25 marks]
2. 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.
 - (a) Estimate α and β [5 marks]
 - (b) Test at the 5% level the statistical significance of the parameters [7 marks]
 - (c) Calculate the coefficient of determination [7 marks]
 - (d) Report the results obtained in part (a) in standard summary form. [6 marks]

Table 1: Per capita income and the percentage of the economy represented by agriculture reported by the World Bank

Y_i	X_i
6	76
10	16
44	9
47	8
23	14
19	11
13	12
19	11
8	18
44	5
4	26
31	8
24	8
59	9
37	5

3. Explain why the disturbance term is included in the regression equation. [25 marks]
4. Discuss how you would detect the presence of multicollinearity. [25 marks]
5. Given the following production function : $Y_i = \alpha + \beta X_i + e$, derive:
 - a) α [5 marks]
 - b) β [5 marks]
 - c) coefficient of determination (R^2) [5 marks]
 - d) Show that β is an unbiased estimator. [10 marks]
6. With the aid of examples, explain how a categorical variable is included in the regression model. [25 marks]

End of Paper