



**KENYATTA UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2017/2018**  
**FIRST SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF ECONOMICS**

**EES 811: ADVANCED STATISTICS**

**DATE:**        **Wednesday, 7<sup>th</sup> February 2018**        **TIME:**    **9.00a.m-12.00p.m**

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**INSTRUCTIONS:**

**Answer any FOUR Questions**

**QUESTION ONE**

Given the following data that shows profits of a company (Y) , number of employees(X1) and advertisement expenditure (X2)

|    |     |     |     |     |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Y  | 120 | 150 | 156 | 160 | 163 | 170 | 190 | 210 | 230 |
| X1 | 10  | 12  | 15  | 16  | 19  | 19  | 21  | 23  | 27  |
| X2 | 23  | 23  | 34  | 36  | 37  | 42  | 43  | 45  | 60  |

Required:

- i. Estimate the profits function ( 5 marks)
- ii. Test for the significance of the estimated parameters at 5% level ( 5marks)
- iii. Interpret your results above ( 5 marks)

**QUESTION TWO**

- (a) Explain the limitations of LPM ( 5 mark
- (b) Given the following:

$$\sum (u_t - u_{t-1})^2 = 420 \quad \sum u_t^2 = 200$$

Using the above information test for autocorrelation and comment on your results (4 marks)

(c) Discuss the various methods you can use in sample size determination (6 marks)

### QUESTION THREE

(a) Consider the model,

$$\text{Consumption: } c_t = \alpha_0 + \alpha_1 y_t + \alpha_2 c_{t-1} + \varepsilon_{t1}$$

$$\text{Investment: } i_t = \beta_0 + \beta_1 r_t + \beta_2 (y_t - y_{t-1}) + \varepsilon_{t2}$$

$$\text{Demand: } y_t = c_t + i_t + g_t$$

(1) Derive the reduced form equations

(4 marks)

(2) Are the structural equations identified?

(6 marks)

(b) Explain what you understand by the following terms:

(1) Structural and reduced form equations

(2 marks)

(2) Simultaneous equation bias

(1 marks)

(3) Rank and Order conditions for identification

(2 marks)

### QUESTION FOUR

(a) Explain the various types of lags in econometrics models (4 marks)

(b) Discuss the importance of statistics in any economy (5marks)

(c) Given the following data for four samples A, B,C,D

| A  | B  | C  | D  |
|----|----|----|----|
| 12 | 20 | 33 | 18 |
| 3  | 19 | 43 | 29 |
| 43 | 15 | 65 | 45 |
| 17 | 34 | 18 | 53 |
|    | 17 |    | 34 |

Test the whether the four samples come from the same population (6 marks)