KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS

2009/2010 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF SCIENCE IN ECONOMICS AND MATHEMATICS

COURSE CODE: ECON 312

COURSE TITLE: ECONOMETRIC I

STREAM: Y3S2

DAY: WEDNESDAY

TIME: 2:00 – 4:00 P.M.

DATE: 02/12/2009

INSTRUCTIONS:

Answer question **ONE** and any other **TWO** questions

PLEASE TURN OVER

1. (a) Define econometrics and explain three reasons why it deserves to be studied in its unique way

(4mks)

(b) State the classical linear regussion assumptions

(8mks)

(c) Given the following data on income (x) and consumption (y) for 25 households.

Household	**x**	**y**
1	52.30	36.40
2	78.44	46.80
3	88.76	57.20
4	54.08	67.60
5	111.44	74.30
6	105.20	86.50
7	45.73	91.30
8	122.35	102.80
9	142.24	114.50
10	86.22	120.90
11	174.50	135.00
12	185.20	144.00
13	111.80	156.00
14	214.60	173.70
15	144.60	182.00
16	174.36	199.20
17	215.40	208.00
18	286.24	217.80
19	188.56	223.20
20	237.20	234.00
21	181.80	251.00
22	373.00	260.00
23	191.60	289.50
24	247.12	296.40
25	269.60	312.00

Required

(i) Assuming $y = \gamma = \propto + \beta x + \epsilon$, Obtain the OLS estimators of $\propto$ and β

(ii) Estimate the standard errors of $\hat{\propto}$ and $\hat{\beta}$ (5mks)

(iii) Obtain a 95% confidence interval for β. Comment on your interval

(2mks)

(iv) Explain the significance of the disturbance term (ϵ) (5mks)

(d) Discuss the desirable properties of an econometric model (3mks)

2. (a) An econometrician has specified and estimated an econometric relationship, his results show that the estimate and the "a prior" expected signs and magnitudes of one of the co-efficients disaqree. Should he accept or reject these results. Using appropriate example explain this scenario. (6mks)

(b) As an econometrician, what econometric methodology would you consider appropriate to undertake in studying an economic phenomenon? Briefly explain each one of the steps you have chosen (14mks)

3. (a) In the Keynesian consumption function

$C_t = \alpha + \delta y^d{}_t$

The estimated marginal propensity to consume is simply δ while the average propensity to consumer is $^c/_y{}^d = \frac{\hat{a}}{yd} + \hat{\partial}$

Using data from 200 households on annual income and consumption we found the following regression equation.

$C_t = 138.52 + 0.725\ y_t \partial$

$\Re^2 = 0.862$

$\Re = 0.928$

(i) Provide an interpretation of the constant in this equation and comment about its sign and magnitude (3mks)

(ii) Interpret the value of $\Re^2$ and $\Re$ (4mks)

(iii) Calculate the predicted consumption of a hypothetical household with annual income of shs. 40,0000 (3mks)

(b) With examples explain the difference between deterministic and stochastic relations (4mks)

(c) Prove that the OLS co-efficient for the slope parameter in the simple linear regression model is BLUE (6mks)

4. (a) Consider a simple classical linear requession model given as:-

$\gamma i = \propto + \beta x\ i + \in i$

Where y_i = The dependent variable

xi = The explanatory variable

$\in i$ = The random disturbance term

$\propto$ and β = The parameters of the model.

i = The observation

Required

Derive the ordinary least squares estimates for the above specified model (7mks)

(b) The following data refers to the price of a good P and quantity of the good supplies, S;

P	2	7	5	1	4	8	2	8
S	15	41	32	9	28	42	17	40

$\Sigma S^2 = 1205$, $\Sigma P^2 = 55.9$ $\Sigma PS = 255.4$

(Lower-case letters denote deviations of variables from means)

Required

(i) Specify and estimate the model of this good and compute the co-efficient of determination (7mks)

(ii) Interpret your results in (i) above (3mks)

(iii) Test the hypothesis that price influences supply (3mks)

5. (a) Examine the steps that should be followed when testing the significance of the OLS co-efficient. (4mks)

(b) Prove that the OLS estimates for the parameters in the multiple regression model is unbiased (6mks)

(c) Discuss the problems associated with the use of R^2 in judging the performance of a single equation or as a basis of comparison of different equations (10mks)