MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (PROGRAMMING AND STATITICS)

SST 404: ECONOMETRICS II

DATE: 6/12/2019 **TIME: 8.30-10.30 AM**

INSTRUCTIONS:

Answer question one and any other two questions

QUESTION ONE (30 MARKS)

You are given the following information on 16 employees of a particular company

Monthly salary (000's ksh)	Gender	Specialization
38	F	MBA
31	M	MBA
19	M	ECON
28	F	ECON
33	M	MBA
23	F	ECON
33	F	ECON
32	F	MBA
27	M	ECON
36	M	MBA
20	M	ECON
36	F	ECON
25	M	ECON
27	M	MBA
41	F	MBA
28	M	ECON

Where F= Female and M= Male

a) Regress monthly salary on gender and specialization assuming that: female = 1, otherwise 0 and econ = 1, otherwise 0. (12 marks)

b) Estimate the variance-covariance matrix of the above data and specify the standard errors of the regression coefficients. (6 marks)

c) Test for the statistical of each coefficient in the model, assuming a 5% level of significance. Use t = 2.179 (6 marks)

d) Find the expected salary of a female who specialised in economics (2 marks)

e) State the steps in the chow test for dummy variable analysis test for stability (4 marks)

QUESTION TWO (20MARKS)

a) Distinguish between univariate and multivariate time series analysis (2 marks)

b) What is the difference between AR, MA, ARM A and ARIMA models in time series analysis? (6 marks)

c) Analyse the two problems and the two remedial measures for nonstationary time series data? (4 marks)

d) State the characteristics of an integrated series? (4 marks)

e) Specify the four steps in the augmented dickey fuller test (4 marks)

QUESTION THREE (20 MARKS)

a) Distinguish between the pros and cons of panel data and panel data analysis? (6 marks)

b) Compare and contrast between the following:

i. Balanced and unbalanced panel (2 marks)

ii. Fixed effect and random effect (2 marks)

iii. Cross section data and time series data model (2 marks)

c) Discuss the steps used in estimating panel data models using fixed effects model (4 marks)

d) What are the properties of the error term in a random effect model? (4 marks)

QUESTION FOUR (20 MARKS)

Consider the following simple Keynesian model of national income determination.

Consumer function: $C_t = a_0 + a_1Y_t + a_2C_{t-1} + U_1$

Investment function: $I_t = b_0 + b_1Y_{t-1} + b_2Y_t + U_2$

Income identity: $Y_t = C_t + I_t + G_t$

Where G_t is the level of government expenditure, and Y_{t-1} and C_{t-1} is the lagged income and lagged consumption function.

a) Identify the endogenous and exogenous variables respectively? (2 marks)

b) Using the order and the rank conditions, examine the identification status of the consumption function. (6 marks)

c) Why is identification of equations important? (2 marks)

d) From the structural equations given above, derive the reduced form equations and show the relationship between them (10 marks)

QUESTION FIVE (20 MARKS)

a) Explain the characteristics of the linear probability model? (6 marks)

b) Give two reasons why logit and probit models are superior to the LPM when estimating dummy dependent variable models

c) The results of these regressions are now summarized in the following data table:

Dependent variable (grade)		Logit model	Probit model
Gpa	Coefficient	2.8261	1.6258
	p-value	0.025	0.019
	Slope	0.5339	0.5333
Tuce	Coefficient	0.0952	0.0517
	p-value	0.501	0.537
	Slope	0.0180	0.0170
Psi	Coefficient	2.3787	1.4263
	p-value	0.025	0.017
	Slope	0.4565	0.4644
Constant	Coefficient	-13.0214	-7.4523
	p-value	0.008	0.003
	R-squared	0.3740	0.3775
Predicted Probability			

Interpret the results of the logit and probit models as presented above (10 marks)