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UNIVERSITY EXAMINATIONS 2024/2025

THIRD YEAR, FIRST SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN ECONOMICS

BEC 3302: ECONOMETRICS I

DATE: JANUARY 2025 **TIME: 2 HOURS**

INSTRUCTIONS: ***Answer Question ONE and any other TWO Questions.***

QUESTION ONE – (30 MARKS)

a) Define the term hypothesis testing and state the two types of hypothesis. (5 Marks)

b) Distinguish between the following

i. Deterministic function and stochastic function (2 Marks)

ii. Sample regression line and population regression line (2 Marks)

iii. Panel data and cross section data (2 Marks)

c) Given the following data:

X	40	50	38	60	65	50	35
Y	38	60	55	70	60	48	30

Calculate:

i. Regression coefficients of Y on X (3 Marks)

ii. Coefficient of determination (r^2) (3 Marks)

iii. Regression equation (2 Marks)

iv. Value of Y when X=55 (2 Marks)

v. Adjusted $r^{2.}$ (3 Marks)

d) Discuss the limitations of relying on economic theory only. (6 Marks)

QUESTION TWO – (20 MARKS)

a) Explain the assumptions of the ordinary least squares methodology. (10 Marks)

b) Differentiate between correlation and regression analysis. (5 Marks)

c) Give reasons for including an error term in an econometric model specification. (5 Marks)

QUESTION THREE – (20 MARKS)

a) Discuss the steps in econometric analysis. (8 Marks)

b) Using population and sample regression lines demonstrate the steps used to derive OLS estimates β0 and β1 (12 Marks)

QUESTION FOUR - (20 MARKS)

a) Discuss the types of data used in econometric analysis indicating the advantages of each type over the other. (8 Marks)

b) There were finalists in a beauty pageant contest. Two judges A and B separately ranked the contestants as follows:

Contestants	V	W	X	Y	Z
Ranked by judge A	2	1	5	1	4
Ranked by judge B	4	2	5	3	3

Calculate the Spearman's rank correlation coefficient for the judgment. (6 Marks)

c) Discuss the properties of an OLS estimator such as $\hat{\beta}$ is said to be BLUE - i.e. best linear unbiased estimator. (6 Marks)

QUESTION FIVE – (20 MARKS)

a) Discuss the limitations of the coefficient of determination or goodness of fit (R^2) that are solved by the adjusted R^2. (8 Marks)

b) Discuss the three common approaches used in hypothesis testing. (6 Marks)

c) Briefly explain the violations of OLS assumptions (6 Marks**)**