

UNIVERSITY OF RUHUNA

2018/2019 Academic Year

B. A. (General/Special) Degree - 2000 Level
1st Semester Examination – 2019 October/November

ECN 21643/ECN 21533 – Economic Statistics

Answer any four (04) questions.

Time: 03 Hours

1. (i) What is statistics? Explain. (03 Marks)
- (ii) What is the difference between a sample and a population? (04 Marks)
- (iii) What are the advantages of using sampling? (03 Marks)
- (iv) Why does stratified random sampling is more important than simple random sampling? (02 Marks)
- (v) Present / name three types of non-sampling errors. (03 Marks)

2. (i) What are the measures of Central Tendency? Give one advantage and disadvantage for each measure. (06 Marks)

(ii) Following are the data about two investment returns (in Rupees).

Investment A:

$$\bar{X}_A = 13.50 \quad S_A = 6.5$$

Investment B:

$$\bar{X}_B = 15.50 \quad S_B = 9.0$$

Which investment is less risky? Why?

(02 Marks)

(iii) Following are the marks taken by 20 students for economic statistics.

60, 64, 80, 90, 75, 42, 43, 50, 55, 35, 44, 37, 66, 59, 71, 80, 55, 50, 55, 40

Calculate the following statistics using the above data.

- (A) Mean, median, and mode.
- (B) Range, variance, and standard deviation.

(07 Marks)

3. A car dealer is interested in finding a negative relationship between Odometer reading (x) and selling price of a used car (y). Following are the basic details.

$n = 100$	$\sum x = 3601.1$	$\sum y = 1623.7$
$\bar{x} = 36.1$	$\bar{y} = 16.24$	$\sum x^2 = 133986.6$
$\sum y^2 = 26421.9$	$\sum xy = 580067.4$	
$SSE = 20.07$	$s_y^2 = 0.5848$	

- (i) Estimate the least squares regression line for the above details. (06 Marks)
- (ii) Interpret the values you obtained for $\hat{\beta}_0$ and $\hat{\beta}_1$ in (i). (04 Marks)
- (iii) Calculate the coefficient of determination (R^2) and interpret the results. (05 Marks)

4. A businessman wanted to examine whether there is a positive relationship between advertising expenditure (x) and sales revenue (y). He estimated a simple linear regression model using Excel. Following is the Excel output (see the attached Annex 01).

- (i) Conduct a hypothesis test at 5% significant level to determine whether advertising expenditure increases sales revenue. (12 Marks)
- (ii) Is this model realistic? Give reasons. (03 Marks)

- 5. (i) What are the six steps to perform a multiple regression analysis? (06 Marks)
- (ii) Develop a multiple regression model for a research problem you are interested in. Define variables and types of data. Describe how to collect data to estimate the model. (06 Marks)
- (iii) Explain how you assess your model. (03 Marks)

Following tables show the household per week

Food Item
Rice
Beans
Dal
Chicken
Fish

- (i) Calculate the index number for the year. Interpret the result.
- (ii) "Paasche Price Index" Give reasons for its use.

6. Following tables shows prices and quantities of selected five food items consumed by a household per week in Matara in 2010 and 2018.

Food Item	2010		2018	
	Price (Rupees)	Quantity (K.G.)	Price (Rupees)	Quantity (K.G.)
Rice	50	15	85	14
Beans	200	07	350	10
Dal	60	05	90	06
Chicken	250	06	400	08
Fish	500	07	700	08

(i) Calculate the Laspeyres and Paasche Price Indexes for 2018, using 2010 as the base year. Interpret the results.

(10 Marks)

(ii) "Paasche Price Index is more realistic than the Laspeyres Price Index." Do you agree? Give reasons.

(05 Marks)

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