



UNIVERSITY OF RUHUNA
FACULTY OF FISHERIES AND MARINE SCIENCES & TECHNOLOGY

Academic Year 2020/2021

Bachelor of Science Honours in Fisheries and Marine Sciences Degree/ Bachelor of
Science Honours in Marine and Freshwater Sciences Degree

Level I Semester II Examinations – April 2024

OCG 1252: Statistics for Experimental Analysis 1

Time: 2 hours

Answer only **Four (04)** questions

- 01.) A sample of 20 students were given a diagnostic test before studying the Advance Statistics module and then again after completing the module. We want to find out if, in general, our teaching leads to improvements in students' knowledge/skills (i.e. test scores).

Results of the Advanced Statistics module (Before and After) are given below. Using a suitable statistical test, draw your conclusions about the impact of this module in general.

STUDENT	PRE MODULE SCORE	POST MODULE SCORE
1	18	22
2	21	25
3	16	17
4	22	24
5	19	16
6	24	29
7	17	20
8	21	23
9	23	19
10	18	20
11	14	15
12	16	15
13	16	18
14	19	26
15	18	18
16	20	24
17	12	18
18	22	25
19	15	19
20	17	16

30 min

(25 marks)

02.) Write short notes on any **three (03)** of the followings.

- a. Standard Error (SE)
- b. Explain what is interpreted by r and r^2
- c. Type I error in hypotheses testing
- d. Central tendency
- e. Types of t-test and its uses

30 min

(25 marks)

03.) You want to know if gender of Parrotfish (*Scarus rubroviolaceus*) has an affinity with the substrate cover of a coral ecosystem.

You observe ⁴²⁰~~440~~ Parrotfishes in a simple random sample to find out which substrate cover they prefer.

The results of the survey are shown in the table below:

	Coral rubble	Dead Coral	Live Coral
Male	30	100	70
Female	20	140	60

Carryout a suitable test to determine if gender of Parrot Fish is linked to substrate cover preference.

Provide a full interpretation of your results.

30 min

(25 marks)

04.) Write a detailed essay on 'Descriptive Statistics'

30 min

(25 marks)

05.) a). Explain the rationale behind Analysis of Variance

b). Fully interpret the following ANOVA table.

	DF	SS	MS	F	P
Factor	2	6197.85	3098.93	3549.44	0.000
Residual	87	75.96	0.87		
Total	89	6273.81			

30 min

(25 marks)

06.) You're studying the relationship between weight and length of ~~between~~ newborn Common Bottle nose Dolphins (*Tursiops truncatus*).

The weights and lengths of the 10 babies born last month at Ruhuna University Marine Aquarium are given below.

Calculate the relationship between these two variables and determine whether there is a significant correlation.

What can you say about the relationship between length and weight of Common Bottle Nose Dolphin Babies?

Weight Kg	3.63	3.02	3.82	3.42	3.59	2.87	3.03	3.46	3.36	3.30
Length	53.1	49.7	48.4	54.2	54.9	43.7	47.2	45.2	54.4	50.4

30 min

(25 marks)