



INSTITUTE OF INDIGENOUS MEDICINE, UNIVERSITY OF COLOMBO  
DEGREE OF BACHELOR OF UNANI MEDICINE AND SURGERY  
SECOND PROFESSIONAL (2017/2018) EXAMINATION  
OCTOBER-NOVEMBER 2022  
RESEARCH METHODOLOGY AND BIOSTATISTICS - U.2.1.6

Date: 15.10.2022

Time: 9.45AM – 12.15 PM

Index No

Answer all questions.

Structured Questions

01.

1.1. Compare and contrast research methods and research methodology (03 Marks)

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1.2. What is the difference between the dependent variable and the independent variable? (02 Marks)

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1.3 Briefly describe cross sectional study with an example (03 Marks)

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2.

2.1 What you can do to rectify the following ethical issues (2 X 2) = (4 Marks)

2.1.1 A group of undergraduate students collected data from a group of bank officers, with their consent, regarding their working hours and salary with regards to the prevalence of high blood pressure. Subsequently the researchers gave the same data to another group who were in need of same data variables.

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2.1.2 Students are required to prepare a research proposal during their undergraduate program. Nimal developed the idea for his project and discussed with a friend. Several months later, he found that his idea had been submitted as a research proposal by his friend without his knowledge.

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2.2 Write the following details of an article in Vancouver style to save under the 'Reference' (2 Marks)

Journal: Clin Exp Pharmacol Physiol.  
Authors: Subash Gupta, Srridevi Patchva , Wonil Koh, Bharat Aggarwal  
Topic: Discovery of curcumin, a component of golden spice, and its miraculous biological activities.  
Published: 2012 Mar, Volume 39, issue 3, page numbers 283-99.

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2.3 Describe the Phase II trial briefly (2 Marks)

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3. Compute the Standard Error of the Mean for the given data below (06 Marks)

Sample	Mean	Standard deviation (SD)	Standard error of the Mean
1	0.250	0.022	
2	0.245	0.046	
3	0.218	0.032	

n=100

Student could apply the below formula to find out the standard error of the mean

$$SE_{\bar{x}} = \frac{s}{\sqrt{n}}$$

4. Bellow table present the patient's count for a village clinic. By using the given data calculate the probability of an event (10 Marks)

Sex Diabetic status	Male (B)	Female (B')	Total
Diabetic (A)	15	8	23
Normal (A')	40	62	102
Sum	55	70	125

- a.  $P(A)$
- b.  $P(A')$
- c.  $P(B)$
- d.  $P(B')$
- e.  $P(A \cap B)$

a.....

b.....

c.....

d.....

e.....

5. (02 Marks)  
 5.1. What are the properties of normal distribution?

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5.2.Explain the normal distribution with the graphical presentation?

(06 Marks)

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**ESSAY QUESTIONS**

1.

1.1. Describe the five (05) types of research studies

(10 Marks)

1.2. A fitness instructor wants to test the effectiveness of a performance-enhancing herbal supplement on students in her exercise class. To create experimental groups that are similar at the beginning of the study, the students are assigned to two groups at random (they cannot choose which group they are in). Students in both groups are given a pill to take every day, but they do not know whether the pill is a placebo (sugar pill) or an herbal supplement. The instructor gives Group A the herbal supplement and Group B receives the placebo (sugar pill). The students' fitness level is compared before and after six weeks of consuming the supplement or the sugar pill. No differences in performance ability were found between the two groups.

a) Write the independent and dependent variables in this study?

(2 Marks)

b) To minimize the bias in this research, write 2 advice that you can give to these participants to follow during the study period.

(2 Marks)

c) What kind of intervention does the researcher designed in this study

(2 Marks)

d) Write another name for the placebo group (2 Marks)

e) What kind of sample design was selected in this study (2 Marks)

2.

Following table presents the weight of pregnant women in a maternity clinic who were selected for a community research. By using the given data answer the bellow questions. All the calculations to be presented in the given space/ answer scripts

Pregnant women number	1	2	3	4	5	6	7	8	9	10
Weight (in Kg)	90	98	120	98	90	65	90	100	75	85

2.1 The mean (04 Marks)

2.2 The mode (04 Marks)

2.3 Median (04 Marks)

2.4 Standard deviation

(08 Marks)

## Standard deviation

- For Ungrouped Data
- $s$  = sample std. dev.

$$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}}$$

$x_i$  = observed value

$\bar{x}$  = average

$n$  = no. of observed value

- or use

$$s = \sqrt{\frac{n \sum_{i=1}^n x_i^2 - \left[ \sum_{i=1}^n x_i \right]^2}{n(n-1)}}$$

Date:15.10.2022

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