THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF BASIC SCIENCES
ACADEMIC YEAR 2020/2021 – SEMESTER 01
BACHELOR OF PHARMACY HONOURS
BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS

BSU4230 – BASIC STATISTICS – LEVEL 04
CONTINUOUS ASSESSMENT TEST I - NBT I
DURATION: ONE HOUR

DATE: **24th November 2021**   TIME: **11.00 am – 12.00 noon**

REGISTRATION NO: ....

IMPORTANT INSTRUCTIONS / INFORMATION TO CANDIDATES

- This question paper consists of **10 pages** with **10 Multiple Choice Questions (Part A) and 02 Structured Essay Questions (Part B).**

- **Part A / Section 1: Multiple Choice Questions - MCQs (20 marks):** There are 10 MCQs. Indicate answers for **all** questions in the answer sheet provided by placing a cross (x) in ink in the relevant cage (answers in pencil will not be marked).

- **Part B / Section 2: Structured Essay Questions–SEQs (80 marks):** There are 2 SEQs. Write answers for all within the space provided in the question paper.

- Answer **ALL** questions

- Write your **Registration Number** in the space provided.

- Do NOT bring in on person or have in possession unauthorized materials, including mobile phones and other electronic devices, or violate any other examination rules.

- Do NOT remove any page/part of this question paper from the examination hall.

- Non-programmable calculators are allowed.

- Please **fill the address sheet. (See last page).**

REGISTRATION NO: ....

ANSWER SHEET FOR PART A

Q. No.	(a)	(b)	(c)	(d)
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

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Part A – Multiple Choice Questions
(2 * 10 = 20 marks)

Choose the most suitable/ best answer and indicate with a 'X' in the answer sheet

1. Which one of the following can be used to represent categorical data graphically?
   a) Pie chart
   b) Histogram
   c) Scatter plot
   d) Steam and leaf plot

2. One of the advantages of using a box and whisker plot to graphically represent continuous data is that,
   a) it indicates the outliers
   b) it gives the frequencies of each value
   c) it illustrates various patterns of two quantitative variables
   d) it clearly shows the shape of the distribution

3. The probability of an event cannot be,
   a) equal to zero
   b) greater than zero
   c) equal to one
   d) greater than one

4. Which one of the following is a characteristic of both normal and standard normal distributions?
   a) Unimodal distribution
   b) Mean of the distribution is zero
   c) Standard deviation is 1
   d) Discrete probability distribution

5. The study that is used to examine the validity of predetermined beliefs or hypotheses is called
   a) an experimental study
   b) a confirmatory study
   c) a case study
   d) a pilot study

6. Which one of the following is NOT an advantage of the Observational studies?
   a) It is convenient
   b) It is less time consuming
   c) It requires less prior knowledge
   d) It minimizes possible confounding effects

Using the given distribution of the monthly income of a family, answer question 7 and 8.

Distribution of the monthly income
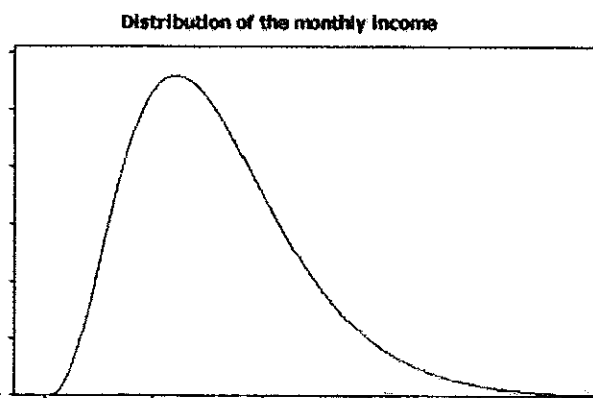
7. The correct relationship between mean, median and mode is represented by,
   a) $mode < mean < median$
   b) $median < mean < mode$
   c) $mode < median < mean$
   d) $mean < median < mode$

8. The best measure of dispersion to represent the monthly income is the
   a) mean
   b) median
   c) range
   d) inter quartile range

9. Select the correct statement with respect to the non-sampling error,
   a) It occurs due to the sample being not representative of the population
   b) It increases due to the response bias and missing value bias
   c) It can be reduced by using appropriate design for data collection
   d) It can be reduced by increasing the sample size

10. A set of data has a normal distribution with mean = 65 and variance = 25. What percentage of data are between 55 and 75?
    a) 66 %
    b) 68%
    c) 95%
    d) 99%

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Part B –Structured Essay Questions
(80 marks)

Write answers in the space provided.

1.

a) The cholesterol level values (milligrams per decilitre, mg/dL) of a randomly selected group of 10 patients given below.

168, 200, 206, 180, 194, 150, 242, 245, 145, 168,

   i. Define the terms mean, median and mode. **(06 marks)**

   ii. Calculate the Mean. **(02 marks)**

   iii. Determine the median and mode. **(04 marks)**

   iv. Calculate the inter quartile range. **(05 marks)**

v. Sketch a box and whisker plot for the given data and denote the first quartile (Q1), second quartile (Q2) and third quartile (Q3) in the plot. **(06 marks)**

vi. The distribution of the cholesterol level is symmetric. Do you agree with this statement? Give reasons for your answer based on the box plot in part v. **(04 marks)**

vii. What is the name of the graph to identify the relationship between the cholesterol level and the maximum heart rate (beats per minutes)? **(03 marks)**

b) Name the scale of measurement of the following variables. **(06 marks)**

i. Size of a T shirt (S, M, L, XL)- ....

ii. Education level (O/L, A/L, degree, postgraduate)- ....

iii. Time- ....

iv. Level of physical activity (inactive, somewhat active, fairly active, very active)-

....

v. Time duration- ....

vi. Employment of the patient (government, semi government, private)- ....

c) Write down two (02) examples for the following. **(04 marks)**

i. Discrete variable – ....

....

ii. Continuous variable- ....

....

2.

a) Match five (05) research studies given on the left with the descriptions given on your right. Select the most accurate one and write the relevant letter in the given brackets.

(10 marks)

Research Study	Answer
Pilot Study	( )
Observational Study	( )
Experimental Study	( )
Prospective Study	( )
Retrospective Study	( )

Descriptions

A. Individuals are sampled and information is collected about their past

B. Individuals are followed over time and data about them is collected as their characteristics or circumstances change

C. Researcher has no control over the variables

D. Applying treatments to a group and recording the effects by the researcher

E. Small scale, preliminary studies which aim to identify the possible weaknesses in the research design

b) In a hospital ward, 25 are adult males, 18 are adult females and 7 are children.
i. Construct a frequency table for the "Type of the patient" (adult male/adult female/ children) and calculate the relative frequencies as percentage. **(07 marks)**

ii. If a person is randomly selected from this ward, find the probability that the person is an adult male or an adult female? **(04 marks)**

iii. If 02(two) people are randomly selected, find the probability that both of them will be children. **(04 marks)**

c) Age of a group of patients is distributed as follows. 18 patients are between 10-29 years, 22 patients are 30-49 years and 10 patients are 50-69.

i. Construct a frequency table for the "Age" of the patient and calculate the cumulative frequencies as percentage. **(07 marks)**

ii. If a person is randomly selected from this ward, find the probability: **(08 marks)**

    a) that the person is in between 10-29 age group.

    b) that the person is in between 30-49 age group.

    c) that the person will less than 50 years old.

    d) that the person will greater than or equal 30 years old.

Reg. No:..

Name:...

Address:..

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