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THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF BASIC SCIENCES
ACADEMIC YEAR 2019/2020 – SEMESTER I

BACHELOR OF PHARMACY HONOURS – LEVEL 4
BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS – LEVEL 4
BSU4230 – BASIC STATISTICS
CONTINUOUS ASSESSMENT II (NBT II) **DURATION: ONE HOUR**

DATE: 11th March 2020 TIME: .1.00 PM – 2.00PM

REGISTRATION NO: .....

IMPORTANT INSTRUCTIONS/ INFORMATIONS TO CANDIDATES

- This question paper consists of **10 pages** with **10 Multiple Choice Questions (Part A)** and **02 Structured Essay Questions (Part B).**
- Write your Registration Number in the space provided.
- Answer **ALL** questions.
- **Multiple Choice Questions (Part A):** Indicate answers in the answer sheet provided by placing a cross (X) in **INK** in the relevant cage. (answers in pencil will **NOT** be marked)
- **Structured Essay Questions (Part B):** Write answers within the space provided.
- Do not remove any page/part of this question paper from the examination hall.
- Mobile phones and any other electronic equipment are **NOT** allowed. Leave them outside.
- **Non-programmable calculators are allowed.**
- **Please fill the address sheet. (See last page)**

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ANSWER SHEET FOR PART A

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

REGISTRATION NO: .....

Part A – Multiple Choice Questions
(20 marks)

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

1. Which of the following is classified as unknown or exact value that represents the whole population?
   a) Predictor
   b) Parameter
   c) Estimator
   d) Statistic

2. Standard deviation of a sampling distribution is known as
   a) standard error
   b) statistic error
   c) sampling error
   d) non-sampling error

3. A collection of all elements/ individuals that we wish to draw conclusion is called,
   a) sample
   b) population
   c) statistics
   d) parameter

4. In longitudinal study, data are
   a) collected over time.
   b) collected over a single period of time.
   c) collected over short period of time.
   d) collected only once.

5. If the standard deviation of a population is 50 and the sample size is 16 then the standard deviation of the sampling distribution is,
   a) 0.32
   b) 2.26
   c) 3.12
   d) 12.50

Use the information in the table below and answer the question 6 and 7.

Age Interval	Town A		
	Mid-year Population	Number of Deaths	Death rate per 1000
0-20	2000	4	2.0
21-40	4000	10	2.5
41-60	10000	30	3.0
61-80	12000	75	6.25
80+	4000	70	17.5

6. What is the crude death rate (per 1000) of town A?
   a) 0.03
   b) 0.59
   c) 5.90
   d) 31.25

7. What is the age specific death rates (per 1000) in age group 21-60 in town A?
   a) 1.25
   b) 2.50
   c) 2.85
   d) 5.50

One hundred (100) persons were selected to test a new screening test for a particular disease. All 100 persons were tested using the new and a standard test. According to the results of the tests, the patients were labeled as either having disease (D+) or do not having disease (D-). Results are given below.
Use the information in the table and answer the question 8-10.

	Standard Test		**Total**
	D +	**D -**	
New Test D+	15	25	35
New Test D-	45	20	65
Total	60	40	100

8. What is the sensitivity of this test?
   a) $\frac{15}{35} \times 100$
   b) $\frac{15}{60} \times 100$
   c) $\frac{20}{40} \times 100$
   d) $\frac{20}{65} \times 100$

9. What is the specificity of this test?
   a) $\frac{15}{35} \times 100$
   b) $\frac{15}{60} \times 100$
   c) $\frac{20}{40} \times 100$
   d) $\frac{20}{65} \times 100$

10. The prevalence of this disease is
    a) 0.15
    b) 0.20
    c) 0.35
    d) 0.60

Part B –Structured Essay Questions

(80 marks)

Write answers in the space provided.

1.

i. What is the difference between probability sampling and non-probability sampling?

ii. Write down two (02) probability sampling methods and two (02) non-probability sampling methods.

Probability sampling- _____

_____

Non-probability sampling- _____

_____

iii. Write down one (01) advantage and one (01) disadvantage of non-probability sampling.

Advantage _____

Disadvantage _____

(16 Marks)

iv. Write down the correct answer in the blanks given below.

a) When the population is homogeneous, ... sampling method is more appropriate to select the sample. Items can be selected using ..... tables.

b) Population is first divided into homogeneous subgroup and the elements from each group are chosen randomly. This sampling method is called as ..... sampling. These homogeneous subgroups are called .....

c) When the population is naturally made up with nonhomogeneous subgroups, several groups are selected as the sample. This sampling method is called as ..... sampling. These nonhomogeneous subgroups are called .....

d) When the list of all population elements are not available, sample is collected in a periodic order. This is called ..... sampling. The periodic interval (k) can be roughly estimated by the ratio between ..... and ..... sizes

(24 Marks)

2.

a) A researcher wants to investigate the association between stomach cancer and shellfish consumption. He conducted a study with 125 people with stomach cancer and another 125 people without stomach cancer. After conducting the study, it was found that there were 22 individuals with stomach cancer who had eaten shellfish regularly and in the group of individuals without stomach cancer, there were 16 individuals who had eaten shellfish regularly.

i. What type of study was this?

ii. Consider the description of the study and complete the table below.

	Stomach cancer	
Shellfish consumption	**Presence**	**Absence**
Yes		
No		

iii. Compute the odd ratio (OR).

iv. Interpret the value obtained in part iii.

v. Determine whether consumption of shellfish is a risk factor or not. Give the reason.

(20 Marks)

b) Resting pulse rate (beats per minute) of randomly selected 5 women are given below.

75 77 79 79 80

i. Calculate the mean pulse rate of women.

ii. Calculate the standard deviation of pulse rates.

$$SD = \sqrt{\frac{\sum(x-\bar{x})^2}{n-1}} \quad (Equations\ is\ given\ in\ the\ standard\ notation)$$

iii. Calculate the standard error of the mean.

(20 Marks)

Reg. No:.....

Name:.....

Address:.....

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