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

BACHELOR OF SCIENCE HONOURS IN NURSING
BSU5335 – HEALTH STATISTICS - LEVEL 5
CONTINUOUS ASSESSMENT I (NBT I)   DURATION: $1\frac{1}{2}$ HOUR

DATE: 30th JANUARY 2020   TIME: 09.00 AM – 10.30 AM

REGISTRATION NO: ……………………………………..

IMPORTANT INSTRUCTIONS/ INFORMATIONS TO CANDIDATES

- This question paper consists of **12 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.

- Necessary table is given in page 11.

- 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).**

BACHELOR OF SCIENCE HONOURS IN NURSING
BSU5335 – HEALTH STATISTICS – LEVEL 5
CONTINUOUS ASSESSMENT I (NBT I)

REGISTRATION NO: ....

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. A type of variable which can assume any possible value between two points is called,
   a) Continuous variable
   b) Discrete variable
   c) Qualitative variable
   d) Quantitative variable

2. The relative frequency of each class interval in frequency table is calculated by
   a) dividing the midpoint of the class by the sample size and multiplying it by 100
   b) dividing the frequency of the class by the midpoint and multiplying it by 100
   c) dividing the sample size by the frequency of the class and multiplying it by 100
   d) dividing the frequency of the class by the sample size and multiplying it by 100

3. Which one of the following can be used to represent Qualitative data graphically?
   a) histogram
   b) bar graph
   c) ogive
   d) frequency polygon

4. One question in the survey conducted by WHO (world health organization) asked participants to rate their overall health using 5-point rating scale (Highly Satisfied, Satisfied, Neutral, Dissatisfied, Highly Dissatisfied). The likely scale of measurement used for this question is,
   a) Interval
   b) Nominal
   c) Ordinal
   d) Ratio

5. In a hospital, 45% of the patients have hypertension, 30% of the patients have diabetes and 15% have both. If a patient is selected at random, then the probability that he/she has hypertension or diabetes is,
   a) 0.25
   b) 0.60
   c) 0.75
   d) 0.90

6. 70% of students like Chocolate, and 35% like Chocolate and Cake. What is the probability of those who like Cake given that they already like Chocolate?
   a) 0.46
   b) 0.50
   c) 0.70
   d) 0.85

7. Total area under a normal curve is equal to
   a) 0
   b) 0.5
   c) 1
   d) Infinity

8. What is the correct statement about a Poisson probability distribution?
   a) The mean and variance of the distribution are equal
   b) It is a continuous probability distribution
   c) The number of trials is always less than 5
   d) It represents the number of non-random occurrences in various time intervals

9. Any numerical value that characterize given population is called a/an
   a) Error
   b) Estimator
   c) Statistic
   d) Parameter

10. Type of sampling in which each and every element in the population has an equal chance to being selected for the random sample is classified as
    a) Cluster sampling
    b) Simple random sampling
    c) Stratified sampling
    d) Systematic sampling

Part B –Structured Essay Questions
(80 marks)

Write answers in the space provided. Use the necessary information given in the table below.

01. In a certain country, the dataset of annual number of deaths from tornadoes over the period of 1998-2011 are as follows;

Year	Number of deaths
1998	130
1999	94
2000	40
2001	40
2002	555
2003	54
2004	35
2005	38
2006	67
2007	81
2008	125
2009	21
2010	45
2011	544

a) Arrange the data in ascending order and calculate the summation of number of deaths.

Number of deaths

$$\sum x =$$

(6 Marks)

b) Calculate the average number of deaths over the 14 years.

$\bar{x} =$

(3 Marks)

c) Calculate the median (Q_2) and quartiles (Q_1, Q_3) of number of deaths. (Clearly show steps of the calculations)

(15 Marks)

d) Find the range and Inter quartile range (IQR) of deaths.

(6 Marks)

6

e) Complete the following frequency distribution table by taking the width of the class interval as 2 years.

Year	Frequency
1998-1999	

(7 Marks)

f) Sketch the histogram for above frequency distribution.

(10 Marks)

02.

a) Write down the correct answer in the blanks given below.

i. The set of all possible outcome of an experiment is defined as ....

ii. If an event cannot be decomposed further into two or more events then that event is said to be a ....

iii. If an event consists of two or more events then that event is said to be a ....

iv. If the occurrence of two events cannot happen at the same time, then these two events are said to be ....

v. If the occurrence of event A does not affect the occurrence of event B, then two events, A and B, are said to be ....

(10 Marks)

b) Given a binomial distribution where n=14, probability of success is 0.6.

i. Find the probability of $P(X \leq 1)$. Show all the steps of your calculations.

$$P(X = x) = \binom{n}{x} p^x (1-p)^{n-x} \quad \text{(Standard notations have been used)}$$

$$\binom{n}{x} = \frac{n!}{x!(n-x)!}$$

$$n! = n * (n-1) * (n-2) * \ldots \ldots * 1$$

(8 Marks)

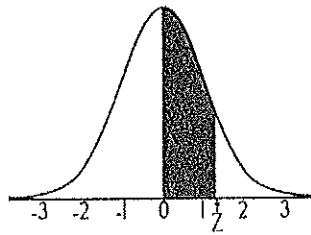ii. What is the mean of this distribution?

(2 Marks)

c) It was found that average length of eye muscles was 20.05 mm with a standard deviation of 0.02 mm. If data are normally distributed, find the probability that an eye muscle selected at random would have a length

    i. between 20.03 mm and 20.08 mm

(8 Marks)

    ii. less than 20.01 mm

(5 Marks)

10

STANDARD NORMAL TABLE (Z)

Entries in the table give the area under the curve between the mean and z standard deviations above the mean. For example, for z = 1.25 the area under the curve between the mean (0) and z is 0.3944.

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0190	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2969	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3513	0.3554	0.3577	0.3529	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998

Reg. No:...

Name:..

Address:..

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