SIR ARTHUR LEWIS COMMUNITY COLLEGE
ACADEMIC YEAR (2024/2025) – SEMESTER ONE
END OF SEMESTER EXAMINATION

COURSE TITLE	**:**	**STATISTICAL APPLICATION**
COURST CODE	**:**	**MAT247**
LECTURER	**:**	**STEVEN AUGUSTE** **HANNAH SCOTT-REGIS** **ZIDANE HADEED**
DATE	:	**Monday 9th December 2024**
TIME	**:**	**1.00 – 3.00 PM**
DURATION	**:**	**2 HRS**
STUDENT ID#	**:**	**…….**

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. Write your student's ID number on all the work you hand in.
2. This paper consists of **two (2) sections,** answer ***all*** questions.
3. Formulae sheet and tables are provided
4. Write in BLACK or BLUE pen. ***(NO WRITING IN PENCIL)***
5. Show all calculations and working.
6. **Only NON-PROGRAMMABLE calculators are permitted**.
7. Do not use correction fluid.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

MAT247 – Statistical Applicators **ANSWER SHEET**

ID Number: _____

1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
3. (A) (B) (C) (D)
4. (A) (B) (C) (D)
5. (A) (B) (C) (D)
6. (A) (B) (C) (D)
7. (A) (B) (C) (D)
8. (A) (B) (C) (D)
9. (A) (B) (C) (D)
10. (A) (B) (C) (D)

For official use; do not write in box

Section A		10
Section B		
Q1		8
Q2		6
Q3		8
Q4		8
Total		**40**

SECTION A

Instructions: *Use your answer sheet to circle the correct response.*

1. The variance of a frequency distribution is:
(a) An approximate indicator of the range of the distribution
(b) A measure of central tendency
(c) The square of the Standard Deviation
(d) A measure of symmetry

2. Data used to satisfy an inquiry other than the one for which it was originally collected is referred to as
(a) Primary (b) Continuous (c) Discrete (d) Secondary

3. The area of statistics that deals with collecting, summarizing, and reporting information about a sample is referred to as
(a) Inferential statistics (b) Descriptive statistics
(c) Demographic Studies (d) Parametric Estimates

4. Which one of the following is an example of continuous data
(a) Quantity of flour used in a cake (b) Number of flowers on a tree
(c) Number of Chairs in the rooms (d) Number of babies born in a year

5. In order to save time and money, researchers collect their data by:
(a) The use of samples. (b) The use of censuses.
(c) Using poorly paid helpers (d) Using random variables

6. The measure of central tendency found in the exact center of a frequency distribution is called the
(a) Mean (b) Median (c) Mode (d) Range

7. For a data set, $\sum x = 84$ and the mean $\bar{x} = 14$. Therefore, the number of observations n is equal to
(a) 70 (b) 6 (c) 1176 (d) 98

8. The sample size
(a) Can be larger than the population size
(b) Is always smaller than the population size
(c) Can be larger or smaller than the population
(d) Is always equal to the size of the population

9. Names used to identify attributes of elements, such as hair colour are
(a) Quantitative data (b) Qualitative data
(c) Secondary Data (d) Descriptive data

10. Which of the following is NOT a measure of spread?
(a) Median (b) Standard deviation (c) Variance (d) Range

SECTION B

Instructions: *Answer all questions, show all working*

1. a) The contingency table below shows the department that 80 students at a community college belongs to and whether they passed or failed their final examination

	Department			
	Science	Business	Humanities	Law
Pass	13	22	12	13
Fail	5	3	4	8

i. What is the probability that a randomly selected student passed their final examination? [2]

ii. What is the probability that a randomly selected student failed or is from the science department? [3]

iii. What is the probability that a randomly selected passed, given that they were a law student? [3]

b) The following probability distribution table shows the number of cars the top Sales Agents at Car Plus sells in a day and their corresponding probability.

Number of cars, x	0	1	2	3	4
Probability, P(X = x)	0.10	0.20	0.30	***a***	0.05

i. Calculate the value of ***a*** [1]

ii. On a typical day, how many cars should the top sales agent expect to sell? [2]

iii. What is the variance of the distribution? [3]

2. a) A large chain retailer purchases the new model Samsung phone from the Samsung store. Samsung admits that 60% of its stock is defective. An inspector randomly picks 12 of the phones from a shipment.
What is the probability that

i. exactly 10 of the phones will be defective [2]

ii. Less than 3 phones will be defective. [3]

b) The speed of vehicles passing on a bridge follows a normal distribution with a mean of 65 mph and a standard deviation of 8mph. Find the probability that a randomly selected vehicle will have a speed of more than 72 miles per hour. [3]

3. a) A sample of 60 sweets had a mean sugar content of 24g with a standard deviation of 3g. Construct a 95% confidence interval for the mean amount of sugar found in these sweets. [3]

b) The manufacturer claims that the average amount of sugar found in their sweets is 21.5g. Test at the 1% significance level to determine whether the true mean is more than 21.5g. [5]

END OF EXAMINATION