Republic of the Philippines

### *CvSU Mission*

*Cavite State University shall provide excellent, equitable and relevant educational opportunities in the arts, sciences and technology through quality instruction and responsive research and development activities.*

*It shall produce professional, skilled and morally upright individuals for global competitiveness.*

### *CvSU Vision*

**Imus Campus**

*The premier University in historic Cavite recognized for excellence in the development of globally competitive and morally upright individuals.*

**CAVITE STATE UNIVERSITY**

**Imus Campus**

Cavite Civic Center, Palico IV, City of Imus, Cavite

www.cvsu-imus.edu.ph

**DEPARTMENT OF COMPUTER STUDIES**

ITEC 95 – Quantitative Methods (Modeling Simulation) | Midterm Examination

2nd Semester A.Y. 2023-2024

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Surname:** | **First Name:** | **M.I.:** | **Course/Year/Section:** | **Date:** | **Score:** |

**GENERAL INSTRUCTIONS:**

* Switch off your **cellular / mobile phone** before taking the *Midterm exam*. Any form of **cheating** is strictly prohibited.

1. **MULTIPLE CHOICE (1 point each). Write the letter of your answer beside the number. CAPITAL LETTERS ONLY.**
2. One of the tools in descriptive statistics that is used to measure the spread or dispersion of each data in the given dataset.
3. Frequency Distribution Table
4. Measure of Central Tendency
5. Measure of Variability
6. Shape Distribution
7. One of the shape distributions that contains an average score which is equal to the median score.
8. Semi Symmetrical Distribution
9. Negative Skewed Distribution
10. Symmetrical Distribution
11. Positive Skewed Distribution
12. In statistics, it is described as the claims, arguments of a certain study that aims to create a discussion.
13. Outliers
14. Variables
15. Parameters
16. Hypothesis
17. It is a type of research that will process raw data and convert it into a useful information that is mainly numerical values.
18. Simulation
19. Modeling
20. Quantitative Analysis
21. Qualitative Analysis
22. It is a type of research that uses characteristics, opinions and other data which represent as words.
23. Qualitative Research
24. Quantitative Research
25. Quantum Research
26. None of the above
27. In Hypothesis testing, it is the area which tells you that your null hypothesis can be accepted if your statistical score falls on this particular area.
28. Healing Region
29. Acceptable Region
30. Rejectable Region
31. Breaking Region
32. In descriptive statistics, it is the average amount of the variability in your dataset that tells you how far each value from the mean.
33. Variance
34. Range
35. Standard Deviation
36. Interquartile Range
37. In statistics, it is described as the small part of the group that can used to describe the larger group.
38. Outliers
39. Sample
40. Population
41. Variance
42. In statistics, it is a statement that claims that there is no significant difference between two variables of a certain study.
43. Good Hypothesis
44. Approved Hypothesis
45. Null Hypothesis
46. Alternative Hypothesis
47. In statistics, it is a measurement or degree that refers to the percentage in which whether we accept or reject the null hypothesis.
48. Z/T score
49. Significance Level
50. Critical Value
51. Degree of Freedom
52. In statistics, it is the value which serve as the margins of statistical scores to determine if the null hypothesis is rejected or not.
53. Confidence Level
54. Significance Level
55. Critical Value
56. Degree of Freedom
57. It is one of the tools of descriptive statistics that is used the mean, median or mode to describe a dataset.
58. Frequency Distribution Table
59. Measure of Central Tendency
60. Measure of Variability
61. Shape Distribution
62. One of the shape distributions that contains an average score which is less than the median.
63. Semi Symmetrical Distribution
64. Negative Skewed Distribution
65. Symmetrical Distribution
66. Positive Skewed Distribution
67. We must arrange the data before calculating:
68. Mean
69. Median
70. Mode
71. Range
72. In this data set, what is the Q2? (10, 20, 30, 40, 50).
73. 15
74. 30
75. 45
76. 50
77. The mean of ten numbers is 58. If one of the numbers is 40, what is the mean of the other nine?
78. 18
79. 60
80. 162
81. 540
82. The mean of 11 numbers is 7. One of the numbers, 13, is deleted. What is the mean of the remaining 10 numbers?
83. 7.7
84. 6.4
85. 6.0
86. 5.8
87. Range, standard deviation, and variance are 'similar' in that each looks at?
88. The difference between high and low scores.
89. How spread out the data is.
90. The central score.
91. The collection to be sampled.
92. Professor Dublin has just given a biology exam and wants to calculate the 'range' of performance of his students. What must he do?
93. Identify the central score.
94. Find the score that occurs most often.
95. Identify how far from average each score is.
96. Subtract the lowest score from the highest score.
97. Professor Dublin wants to ensure he is thorough in his review of student performance, so he decides to calculate 'standard deviation' as well. What must Professor Dublin do to figure out this measure of variability?
98. Subtract the lowest score from the highest score.
99. Find the score that occurs most often.
100. Identify how far from average each score is.
101. Plot scores on a bell curve.
102. What hypothesis is being used to identify the test tail?
103. Null Hypothesis
104. Alternative Hypothesis
105. Simple Hypothesis
106. Final Hypothesis
107. A researcher conducts a sample z-test at a .05 level of significance. If the rejection region is placed in both tails, then what are the critical values for this hypothesis test?
108. 1.645
109. 1.960
110. 2.58
111. 3.30
112. A researcher obtains z score = 2.40 using a one-sample z-test. What is the decision for the hypothesis test at a .02 level of significance with two tails?
113. Accept the Null Hypothesis.
114. Reject the Null Hypothesis.
115. It depends on whether the test is one-tailed or two tailed.
116. None of these.
117. If the alternative hypothesis is unsure of the sign being used, then the test is referred to as?
118. One-Tailed
119. Two-Tailed
120. Three-Tailed
121. No-Tailed
122. The purpose of hypothesis testing is to:
123. Test how far the mean of a sample is from zero
124. Determine whether a statistical result is significant
125. Determine the appropriate value of the significance level
126. Derive the standard error of the data
127. **PROBLEM SOLVING. Solve the following word problem. Provide the given, solution and formula used. Round off in three decimal places.**

*A cigarette manufacturer states that their brand generally has 10 grams or less of nicotine.*

*By using 30 cigarette samples, Employee A determines the nicotine concentration of each sample as follows:*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *8* | *7.7.* | *5.6* | *7.7.* | *8* |
| *7.1* | *11.2* | *8* | *11.2* | *10.03* |
| *10* | *5.5* | *10.03* | *10* | *7.1* |
| *11* | *10* | *10* | *9.75* | *10* |
| *8.1* | *9.1* | *9.75* | *8.1* | *11* |
| *10* | *5.5* | *10.03* | *10* | *7.1* |

*By using 10 cigarette samples, Employee B determines the nicotine concentration of each sample as follows:*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *1000.50* | *10.3* | *9.99* | *7.5* | *9.05* |
| *9.32* | *10.2* | *9.02* | *8.5* | *9.10* |

*\*Both samples used a 99% level of confidence.*

1. *What type of hypothesis is the given scenario? (2 points)*
2. *Null Hypothesis*
3. *Alternative Hypothesis*
4. *Which of the two tests is most appropriate for the hypothesis testing? (2 points)*
5. *Employee A samples*
6. *Employee B samples*
7. *Both Samples*
8. *None of these*
9. *In your answer to question number 2, what is the reason why it is considered the appropriate test to use? (2 points)*

*Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

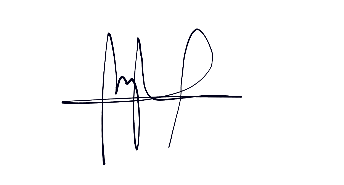
***Note: Compute only for the sample test to be used.***

1. *Compute the mean. (4pts)*
2. *Compute the median. (4pts)*
3. *In a quantitative approach, what is the central tendency? (2pts)*
4. *Find the range. (2pts)*
5. *Find interquartile range. (2pts)*
6. *Find standard deviation. (4pts)*
7. *Check if there is outliers using the IQR method and outlier formula. (4pts)*
8. *Remove outliers and write the new data set. [Remove outliers’ data, indicate and think a valid reason. (2pts)*
9. *Compute for the new mean. (4pts)*
10. *Compute for the new median. (4pts)*
11. *What is the shape distribution of the gathered data if outlier is removed? (2pts)*
12. *What is the new central tendency? (2pts)*
13. *Find the new range. (4pts)*
14. *Find new interquartile range. (2pts)*
15. *Find new standard deviation. (4pts)*
16. *Construct the Null Hypothesis. (2pts)*
17. *Construct the Alternative Hypothesis. (2pts)*
18. *What is the level of significance? (2pts)*
19. *What is the test to be used? (2pts)*
20. *Is the graph a one or two tail? (2pts)*
21. *What is the critical value? (2pts)*
22. *What is the Z/T score? (4pts)*
23. *Decision: Accept or Reject the null hypothesis. (2pts)*
24. *Create a conclusion. (5 points)*

*“Exams test your memory; life tests your learning; others will test your patience.” – Benjamin Franklin*

***GODBLESS!***

***\*\*END OF EXAM\****

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