

**STAT-UB 103**  
**SAMPLE MIDTERM 1**

Name: \_\_\_\_\_

This is the answer sheet. Circle the choice which best answers each question on the exam. Do not write anything else on this sheet (besides your name and the circles). There are 15 questions, each worth 5 points. Everyone receives 25 points for free. Good Luck!

1) (A) (B) (C) (D) (E)

11) (A) (B) (C) (D) (E)

2) (A) (B) (C) (D) (E)

12) (A) (B) (C) (D) (E)

3) (A) (B) (C) (D) (E)

13) (A) (B) (C) (D) (E)

4) (A) (B) (C) (D) (E)

14) (A) (B) (C) (D) (E)

5) (A) (B) (C) (D) (E)

15) (A) (B) (C) (D) (E)

6) (A) (B) (C) (D) (E)

7) (A) (B) (C) (D) (E)

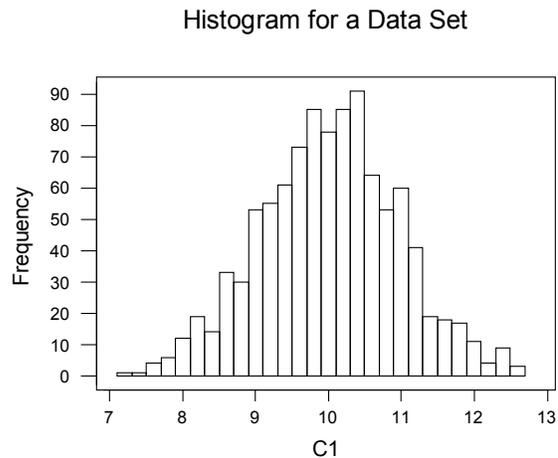
8) (A) (B) (C) (D) (E)

9) (A) (B) (C) (D) (E)

10) (A) (B) (C) (D) (E)

## STAT-UB 103 SAMPLE MIDTERM 1

For questions 1 and 2, refer to the following histogram:



- 1) The distribution shown in the above histogram is  
A) Left-Skewed B) Right-Skewed C) Roughly Symmetrical
- 2) Based on the histogram, the mean of the data set is approximately equal to  
A) 13 B) 6 C) 3 D) 20 E) 10
- 3) Which of the following statements is true for all data sets:  
A) The 25<sup>th</sup> percentile is larger than the 75<sup>th</sup> percentile  
B) The 25<sup>th</sup> percentile is larger than the median  
C) The mean is larger than the median  
D) The 75<sup>th</sup> percentile is greater than or equal to the median  
E) None of the above
- 4) The median of the data set  $\{1, 9, 5, 2, 3\}$  is  
A) 1 B) 9 C) 5 D) 2 E) 3.
- 5) The mean of the data set  $\{1, 9, 5, 2, 3\}$  is  
A) 5 B) 4 C) 6 D) 9 E) 8.

- 6) Suppose that a certain data set has a lower quartile of 10, a median of 15 and an upper quartile of 20. One of the data points is 40. This point would be considered
- A) A typical observation
  - B) An abnormally low value
  - C) A suspect outlier
  - D) A highly suspect outlier
  - E) None of the above.
- 7) Which of the following is true:
- A) The median is more sensitive to outliers than the mean
  - B) The range is more sensitive to outliers than the interquartile range
  - C) The interquartile range is more sensitive to outliers than the standard deviation
  - D) None of the above
- 8) Which of the following is always true:
- A) If the median is halfway between the 25'th and 75'th percentiles, the distribution is symmetric.
  - B) If you double all values in a data set, the sample standard deviation will be multiplied by a factor of 4.
  - C) If you increase the largest data point by 10 units, the range will increase by 10 units.
  - D) If you decrease the smallest data point by 5 units, the median will decrease by 5 units.
  - E) None of the above.
- 9) The relationship between a statistic and a parameter is as follows:
- A) The statistic is a forecast of the parameter.
  - B) The statistic is always equal to the parameter.
  - C) The statistic is an estimate of the parameter.
  - D) The parameter is an estimate of the statistic.
  - E) None of the above.
- 10) Which of the following is an example of coverage error in a survey:
- A) A study on job satisfaction of 2019 Stern graduates is mailed to all of them, but only 25% respond.
  - B) A study on the ease of use of the latest version of GarageBand is sent to all registered users.
  - C) A questionnaire on the difficulty of a class at Stern is given to the first five students on the class list.
- 11) A single die (with six faces) is going to be thrown. Let  $A = \{\text{A five is thrown}\}$ ,  $B = \{\text{A six is thrown}\}$ . The two events A, B are
- A) Independent
  - B) Mutually Exclusive
  - C) Impossible
  - D) None of the Above.

- 12) If A, B are independent events, then  $P(A \cup B)$  is equal to:
- A)  $P(A) + P(B)$
  - B)  $1 - P(A)$
  - C)  $1 - [P(A) + P(B)]$
  - D)  $P(A) + P(B) - P(A)P(B)$
  - E) None of the Above
- 13) Suppose that 60% of US residents are happy, and 40% of US residents are married. Also, suppose that 75% of married US residents are happy. What proportion of happy US residents are married?
- A) 40% B) 50% C) 60% D) 70% E) 75%
- 14) In Problem 13, the events {Happy} and {Married} are
- A) Independent B) Mutually Exclusive C) Dependent
- 15) Suppose that 40% of owners of Kia Optima are teenagers. Suppose also that 10% of the Kia Optima owned by teenagers are purple, and that 5% of the Kia Optima owned by non-teenagers are purple. What proportion of all Kia Optima are purple?
- A) 5% B) 7% C) 10% D) 4% E) It cannot be determined.