

1. Which of the following best describes a discrete random variable?
  - a) A variable that can take on any value within a specified range.
  - b) A variable that can take on only a countable number of distinct values.
  - c) A variable that can take on any value in a continuous interval.
  - d) A variable that can take on only integer values.
2. Which of the following is an example of a discrete random variable?
  - a) Height of individuals in a population.
  - b) Weight of oranges in a basket.
  - c) Number of cars passing through an intersection in a given hour.
  - d) Time taken for a computer program to execute.
3. What is the probability mass function (PMF) used to describe?
  - a) Continuous random variables.
  - b) Discrete random variables.
  - c) The cumulative distribution function.
  - d) The probability density function.
4. Which of the following best describes a continuous random variable?
  - a) A variable that can take on only a countable number of distinct values.
  - b) A variable that can take on any value within a specified range.
  - c) A variable that can take on only integer values.
  - d) A variable that can take on values from a finite set.
5. Which of the following is an example of a continuous random variable?
  - a) Number of students in a classroom.
  - b) Number of heads obtained when flipping a coin.
  - c) Temperature recorded in a city at noon.
  - d) Number of defective items produced in a factory.
6. The probability density function (PDF) is used to describe:
  - a) Discrete random variables.
  - b) Continuous random variables.
  - c) The cumulative distribution function.
  - d) The probability mass function.
7. Which of the following statements is true about the cumulative distribution function (CDF)?
  - a) It can only be defined for discrete random variables.
  - b) It represents the probability density function.
  - c) It provides the probability of a random variable taking a value less than or equal to a given value.
  - d) It is used to calculate the expected value of a random variable.
8. Which of the following is a characteristic of the expected value of a random variable?
  - a) It can be negative.
  - b) It represents the most frequently occurring value.
  - c) It is always greater than the variance.

d) It represents the long-term average value of the random variable.

9. Variance of a random variable measures:

- a) The spread of the distribution.
- b) The likelihood of a particular outcome.
- c) The distance of each value from the mean.
- d) The probability of each outcome occurring.

10. The standard deviation of a random variable is:

- a) Always negative.
- b) A measure of how spread out the values of the random variable are.
- c) Equal to the mean of the random variable.
- d) The same as the variance.