

UNIT-1

1. **Sample Space:** The set of all possible outcomes of an experiment is called: a) Event
b) Random Variable c) Sample Space d) Probability
2. **Discrete Sample Space:** Tossing a coin twice results in which type of sample space? a) Continuous b) Discrete c) Mixed d) Infinite
3. **Conditional Probability:** $P(A | B)$ is defined as: a) $P(A \cap B)/P(B)$ b) $P(A)/P(B)$ c) $P(B)/P(A)$ d) $P(A \cup B)/P(B)$
4. **Bayes' Theorem:** Bayes' theorem is used to: a) Find probability of independent events b) Update probability based on new evidence c) Calculate variance d) Define random variables
5. **Independent Events:** Two events A and B are independent if: a) $P(A \cap B) = P(A) + P(B)$ b) $P(A \cap B) = P(A) \cdot P(B)$ c) $P(A | B) = P(A) + P(B)$ d) $P(A | B) = P(B)$
6. **Bernoulli Trials:** A Bernoulli trial has: a) Multiple outcomes b) Exactly two outcomes c) Continuous outcomes d) No outcomes
7. **Random Variable:** A random variable is: a) A fixed number b) A function mapping outcomes to real numbers c) A probability distribution d) A sample space
8. **Discrete Random Variable:** Which of the following is discrete? a) Height of students b) Number of heads in coin tosses c) Weight of apples d) Temperature
9. **Continuous Random Variable:** Which of the following is continuous? a) Number of cars in a parking lot b) Number of students in a class c) Time taken to run a race d) Number of dice rolled
10. **Mixed Random Variable:** A mixed random variable has: a) Only discrete values b) Only continuous values c) Both discrete and continuous components d) No values

Fill in the Blanks

1. The set of all possible outcomes of an experiment is called the _____.
2. An event that contains only one outcome is called a _____ **event**.
3. The probability of the entire sample space is always _____.
4. If $P(A \cap B) = P(A) \cdot P(B)$, then A and B are _____ **events**.
5. Bayes' theorem helps in _____ **probabilities** based on new information.
6. A Bernoulli trial has exactly _____ **outcomes**.
7. A random variable is a _____ that assigns numerical values to outcomes.
8. The number of students in a class is an example of a _____ **random variable**.
9. The height of a person is an example of a _____ **random variable**.
10. A random variable that has both discrete and continuous parts is called a _____ **random variable**.