

Statistics - ICS Part 1 Statistics Chapter 7 Short Questions Preparation

Q1. Distinguish between joint probability and marginal probability.

Ans 1: The joint probability, denoted by $P(AB)$ or $P(A \cap B)$, is the probability that both A and B will occur. The marginal probability $P(A)$ is the probability that A will occur, whether or not B happens.

Q2. What is the axiomatic approach to probability.

Ans 1: In this approach, the probability that an event A will occur is a number $P(A)$ which satisfies the following axioms.

Q3. Define Independent events.

Ans 1: The Events a and B are said to be independent if the occurrence or nonoccurrence of event A does not affect the probability of occurrence of B. This means that irrespective of whether event A has occurred or not, the probability of occurrence of B is to be the same.

Q4. Can a random variable assume negative value?

Ans 1: Yes a random variable can assume negative values.

Q5. What are random numbers?

Ans 1: Random numbers are a sequence of digits from the set $\{0,1,2,3,\dots,9\}$ so that each digit has the same probability of being selected.

Q6. When does probability become negative.

Ans 1: The probability cannot be negative for ever.

Q7. Define exhaustive or completely exhaustive or collectively exhaustive outcomes.

Ans 1: When a list of outcomes that can result from an experiment includes every possible outcome, the list is said to be completely or collectively exhaustive. In the experiment of tossing a coin, the list head and tail is completely exhaustive.

Q8. Give an example each of simple and compound event.

Ans 1: When two coins are tossed, the event $A = \{HH\}$, that two heads appear is a simple event but the event $B = \{HT, TH\}$ that one head appears is a compound event.

Q9. What is the probability that in selecting two cards one at a time from a deck with replacement, the second card is a face card given that the first card was red.

Ans 1: A red card on the first draw and a face card on the second draw with replacement are independent events.

Ans 2: $P(\text{face card} | \text{red card}) = P(\text{face card}) = 12/52 = 3/13$

Q10. Define exhaustive or completely exhaustive or collectively exhaustive outcomes.

Ans 1: When a list of outcomes that can result from an experiment includes every possible outcome, the list is said to be completely or collectively exhaustive, in the experiment of tossing a coin, the list head and tail is completely exhaustive.