

## 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  $P(A \wedge B)$ , 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 independent if the occurrence or nonoccurrence of event A does not affect the probability of occurrence of B. This means that irrespective whether event A has occurred or not, the probability of occurrence of B is going to be 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  $\{0,1,2,3\dots9\}$  so that each digit has the same probability of being selected.

Q6. When does probability becomes 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.

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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:**  $P(\text{face card 1 red card}) = P(\text{face card}) = 12/52 = 3/13$

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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.

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