

Answer on Question #60264 – Math – Statistics and Probability

Question

During summer vacation Tanuja wants to visit three cities, Kolkata, Bhubaneswar and Chennai randomly. Find the probability that she will visit

- (i) Bhubaneswar before Chennai
- (ii) Bhubaneswar just before Kolkata.

Solution

Let us denote the following events: B="Tanuja visits Bhubaneswar", C="Tanuja visits Chennai", K="Tanuja visits Kolkata". Then the space of all the possible outcomes has the next form:

$$\Omega = \{BCK, BKC, CBK, CKB, KBC, KCB\}, |\Omega| = 6.$$

(i) Let event A = "Tanuja will visit Bhubaneswar before Chennai". It can be represented in the next form:

$$A = \{BCK, BKC, KBC\}, |A| = 3.$$

Then the required probability is equal to $\frac{|A|}{|\Omega|} = \frac{3}{6} = \frac{1}{2} = 0.5$.

(ii) Let event D = "Tanuja will visit Bhubaneswar just before Kolkata". It can be represented in the next form:

$$D = \{BKC, CBK\}, |D| = 2.$$

Then the required probability is equal to $\frac{|D|}{|\Omega|} = \frac{2}{6} = \frac{1}{3}$.

Answer:

(i) $\frac{1}{2}$;

(ii) $\frac{1}{3}$.