

1. Let  $E$  be an event of a sample space  $S$  of an experiment, then  $P(S|E) =$ 
  - (a)  $P(S \cap E)$
  - (b)  $P(E)$
  - (c) 1
  - (d) 0
2. A pair of dice is thrown simultaneously. If  $X$  denotes the absolute difference of the numbers appearing on top of the dice, then find the probability distribution of  $X$ .
3. Airplanes are by far the safest mode of transportation when the number of transported passengers are measured against personal injuries and fatality tools. Previous records state that the probability of an airplane crash is

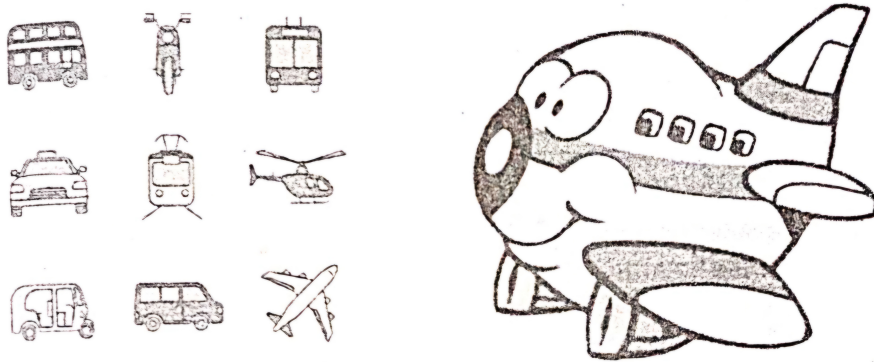


Figure 1: 1

0.00001%. Further, there are 95% chances that there will be survivors after a plane crash. Assume that in case of no crash, all travellers survive. Let  $E_1$  be the event that there is a plane crash and  $E_2$  be the event that there is no crash. Let  $A$  be the event that passengers survive after the journey.

On the basis of the above information, answer the following questions:

- (i) Find the probability that the airplane will not crash.
- (ii) Find  $P(A|E_1) + P(A|E_2)$ .
- (iii) Find  $P(A)$
- (iv) Find  $P(E_2|A)$ .