**Name**:  Syed Tabassum nazeer

# Probability

**Roll No.** :  FWC22093

**Assignment-I**

**13.2.5** [1] A die marked 1, 2, 3 in red and 4, 5, 6 in green is tossed. Let A be the event, the number is even, and B be the event,the number is red . Are A and B independent?
**Solution:** : Given, a die marked 1,2,3 in red and 4,5,6 in green is tossed.Let A be the event, the number is even, and B be the event, the number is red .

From the given information,

| Events | Description |
|--------|-------------|
| A | Number is Even = {2,4,6} |
| B | Number is Red = {1,2,3} |

Table 13.2.5.2: Random variables $A$ and $B$

| Pr(Events) | Values |
|------------|--------|
| Pr(A) | (1/2) |
| Pr(B) | (1/2) |
| Pr(AB) | (1/6) |

Table 13.2.5.4: Probability of events $A$ and $B$

The two events are said to be independent if,

$$\Pr\left(AB\right) = \Pr\left(A\right).\Pr\left(B\right) \tag{13.2.5.1}$$

$$\left(\frac{1}{6}\right) \neq \left(\frac{1}{2}\right)\left(\frac{1}{2}\right) \tag{13.2.5.2}$$

$\therefore$ Therefore, the events A and B are not independent.

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[1]Read question numbers as (CHAPTER NUMBER).(EXERCISE NUMBER).(QUESTION NUMBER)