Assignment 5

Challa Akshay Santoshi - CS21BTECH11012

CBSE Class 11 Probability

Excercise: 16.2 Question: 2

A dice is thrown. Describe the following events:

1) A: a number less than 7
2) B: a number greater than 7
3) C: a multiple of 3
4) D: a number less than 4
5) E: an even number greater than 4
6) F: a number not less than 3

Also find $A \cup B$, $A \cap B$, $B \cup C$, $E \cap F$, $D \cap E$, $A - C$, $D - E$, $E \cap \overline{F}$, $\overline{F}$

Solution:

The possible outcomes when dice is thrown:

$$S = \{1, 2, 3, 4, 5, 6\} \qquad (0.0.1)$$

1) A: a number less than 7

$$A = \{1, 2, 3, 4, 5, 6\} \qquad (0.0.2)$$

2) B: a number greater than 7

$$B = \phi \qquad (0.0.3)$$

3) C: a multiple of 3

$$C = \{3, 6\} \qquad (0.0.4)$$

4) D: a number less than 4

$$D = \{1, 2, 3\} \qquad (0.0.5)$$

5) E: an even number greater than 4

$$E = \{6\} \qquad (0.0.6)$$

6) F: a number not less than 3

$$F = \{3, 4, 5, 6\} \qquad (0.0.7)$$

Using the events we can compute the following relations:

1) $A \cup B$

$$A \cup B = \{1, 2, 3, 4, 5, 6\} \cup \phi \qquad (0.0.8)$$
$$= \{1, 2, 3, 4, 5, 6\} \qquad (0.0.9)$$

2) $A \cap B$

$$A \cap B = \{1, 2, 3, 4, 5, 6\} \cap \phi \qquad (0.0.10)$$
$$= \phi \qquad (0.0.11)$$

3) $B \cup C$

$$B \cup C = \phi \cup \{3, 6\} \qquad (0.0.12)$$
$$= \{3, 6\} \qquad (0.0.13)$$

4) $E \cap F$

$$E \cap F = \{6\} \cap \{3, 4, 5, 6\} \qquad (0.0.14)$$
$$= \{6\} \qquad (0.0.15)$$

5) $D \cap E$

$$D \cap E = \{1, 2, 3\} \cap \{6\} \qquad (0.0.16)$$
$$= \phi \qquad (0.0.17)$$

6) $A - C$

$$A - C = \{1, 2, 3, 4, 5, 6\} - \{3, 6\} \qquad (0.0.18)$$
$$= \{1, 2, 4, 5\} \qquad (0.0.19)$$

7) $D - E$

$$D - E = \{1, 2, 3\} - \{6\} \qquad (0.0.20)$$
$$= \{1, 2, 3\} \qquad (0.0.21)$$

8) $E \cap \overline{F}$

$$E \cap \overline{F} = \{6\} \cap \{1, 2\} \qquad (0.0.22)$$
$$= \phi \qquad (0.0.23)$$

9) $\overline{F}$

$$\overline{F} = \{1, 2\} \qquad (0.0.24)$$