

# ASSIGNMENT 4 : CBSE Probability Grade 10

AI21BTECH11030

## EXERCISE 14.3

**Question - 9 :** Which of the following can not be valid assignment of probabilities for outcomes of sample space  $S = \{\omega_1, \omega_2, \omega_3, \omega_4, \omega_5, \omega_6, \omega_7\}$

Assignment	$\omega_1$	$\omega_2$	$\omega_3$	$\omega_4$	$\omega_5$	$\omega_6$	$\omega_7$
(a)	0.1	0.01	0.05	0.03	0.01	0.2	0.6
(b)	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$
(c)	0.1	0.2	0.3	0.4	0.5	0.6	0.7
(d)	-0.1	0.2	0.3	0.4	-0.2	0.1	0.3
(e)	$\frac{1}{14}$	$\frac{2}{14}$	$\frac{3}{14}$	$\frac{4}{14}$	$\frac{5}{14}$	$\frac{6}{14}$	$\frac{15}{14}$

TABLE I

(d) Assignment (d) is as in Table

Here  $\Pr(\omega_1)$  and  $\Pr(\omega_5)$  are negative Hence, assignment (d) is not valid.

(e) Assignment (e) is as in Table

Here  $\Pr(\omega_7) = \frac{15}{14} > 1$  Hence, assignment (e) is not valid.

## Solution:

(a) Assignment (a) is as in Table

Here each of the probability is positive and less than 1.

Sum of the probabilities

$$= 0.1 + 0.01 + 0.05 + 0.03 + 0.01 + 0.2 + 0.6 \quad (1)$$

$$= 1 \quad (2)$$

Hence, assignment (a) is valid.

(b) Assignment (b) is as in Table.

Here each of the probability is positive and less than 1.

Sum of the probabilities

$$= \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} \quad (3)$$

$$= 1 \quad (4)$$

Hence, assignment (b) is valid.

(c) Assignment (c) is as in Table

Here each of the probability is positive and less than 1.

Sum of the probabilities

$$= 0.1 + 0.2 + 0.3 + 0.4 + 0.5 + 0.6 + 0.7 \quad (5)$$

$$= 2.8 \neq 1 \quad (6)$$

Hence, assignment (c) is not valid.