ASSIGNMENT 4 : CBSE Probability Grade 10

AI21BTECH11030

EXERCISE 16.3

Question - 1 : 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	ω_1	ω_2	ω_3	ω_4	ω_5	ω_6	ω_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
(d)	$\frac{1}{14}$	$\frac{2}{14}$	$\frac{3}{14}$	$\frac{4}{14}$	$\frac{5}{14}$	$\frac{6}{14}$	$\frac{15}{14}$

TABLE I

Solution:

(a) Assignment (a) is as in Table
Here each of the probability is positive and less than 1.
Sum of the probabilities

$$= 0.1 + 0.01 + 0.05 + 0.03 + 0.01 + 0.2 + 0.6 \tag{1}$$

$$= 1 \tag{2}$$

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

$$= \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} \tag{3}$$

$$= 1 \tag{4}$$

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

$$= 0.1 + 0.2 + 0.3 + 0.4 + 0.5 + 0.6 + 0.7 \tag{5}$$

$$= 2.8 \neq 1 \tag{6}$$

Hence, assignment (c) is not valid.

(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.