< 과제 2 >

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(문제 1)

(1) $S = \{(ON,ON,ON), (ON,ON,off), (ON,off,on), (on,off,off), (off,on,ON), (off,ON,off), (off,off,ON), (off,off,off)\}$

(2)

① $(ON,ON,ON) \Rightarrow (0.6)^3 = 0.216$

$(ON,ON,off) \Rightarrow 0.36 \times 0.4 = 0.144$

$(ON,off,on) \Rightarrow 0.144$

$(on,off,off) \Rightarrow 0.6 \times 0.16 = 0.096$

$(off,on,ON) \Rightarrow 0.144$

$(off,ON,off) \Rightarrow 0.096$

$(off,off,ON) \Rightarrow 0.096$

$(off,off,off) \Rightarrow 0.16 \times 0.4 = 0.064$

② $3 \times (0.6 \times 0.6 \times 0.4) = 3 \times (0.36 \times 0.4)$

$= 3 \times 0.144 = 0.432$

③ $(0.6 \times 0.6 \times 0.4) \times 2 = 2 \times 0.144$

$= 0.288$

$\frac{\text{Ⓐ가 on 스위치}}{\text{ON 스위치 2개}} = \frac{0.288}{0.432} = \frac{2}{3}$

$\therefore \frac{2}{3}$

④ $\frac{\text{Ⓐ가 ON일경우}}{\text{모든경우 확률의 합}} = \frac{0.6}{1}$

$\therefore 0.6$

(문제 2)

(1) $S = \{(R), (F,R), (F,F,R), (F,F,F,R), (F,F,F,F)\}$

$(R) \Rightarrow 0.4$

$(F,R) \Rightarrow 0.4 \times 0.6 = 0.24$

$(F,F,R) \Rightarrow 0.36 \times 0.4 = 0.144$

$(F,F,F,R) \Rightarrow 0.0864$

$(F,F,F,F) \Rightarrow (0.6)^4 = 0.1296$

(2)

① (던지는 횟수)

(첫) F / y \ x	1	2	3	4	행합
0	0.4	0	0	0	0.4
1	0	0.24	0	0	0.24
2	0	0	0.144	0	0.144
3	0	0	0	0.0864	0.0864
4	0	0	0	0.1296	0.1296
열합	0.4	0.24	0.144	0.216	1

X	1	2	3	4	계
$P_X(X)$	0.4	0.24	0.144	0.216	1

Y	0	1	2	3	4	계
$P_Y(Y)$	0.4	0.24	0.144	0.0864	0.1296	1

② $P(1,0) = P_X(1) \times P_Y(0) = 0.4 \times 0.4$

$= 0.16 \neq 0.4$

이므로 독립이 아니다.

③ $E(X+Y) = 0.4 + 0.24 \times 3 + 5 \times 0.144 + 7 \times 0.0864 + 8 \times 0.1296 = 3.4816$ "