سوال ۲:

$P(A|y)$ $\quad P(B|y)$ $\quad P(C|y)$

	A = 0	A = 1	B = 0	B = 1	C = 0	C = 1
y = 0	0.75	0.25	0.5	0.5	0.5	0.5
y = 1	0	1	0.33	0.66	0.66	0.33

$P(y=0) = \frac{4}{7}$

$P(y=1) = \frac{3}{7}$

$P(y=0|x_1) \propto P(y=0)\,P(A=0|y=0)\,P(B=0|y=0)\,P(C=0|y=0) = \frac{4}{7} \times 0.75 \times 0.5 \times 0.5 = 0.107$

$P(y=1|x_1) \propto P(y=1)\,P(A=0|y=1)\,P(B=0|y=1)\,P(C=0|y=1) = \frac{3}{7} \times 0 \times 0.33 \times 0.66 = 0$

$\Rightarrow \hat{y}_1 = 0$

$P(y=0|x_2) \propto P(y=0)\,P(A=1|y=0)\,P(B=1|y=0)\,P(C=1|y=0) = \frac{4}{7} \times 0.25 \times 0.5 \times 0.5 = 0.035$

$P(y=1|x_2) \propto P(y=1)\,P(A=1|y=1)\,P(B=1|y=1)\,P(C=1|y=1) = \frac{3}{7} \times 1 \times 0.66 \times 0.33 = 0.095$

$\Rightarrow \hat{y}_2 = 1$

$P(y=0|x_3) \propto P(y=0)P(B=1|y=0)\,P(C=0|y=0) = \frac{4}{7} \times 0.5 \times 0.5 = 0.142$

$P(y=1|x_3) \propto P(y=1)P(B=1|y=1)\,P(C=0|y=1) = \frac{3}{7} \times 0.66 \times 0.66 = 0.190$

$\Rightarrow \hat{y}_3 = 1$

$P(y=0|x_4) \propto P(y=0)P(B=0|y=0)\,P(C=1|y=0) = \frac{4}{7} \times 0.5 \times 0.5 = 0.142$

$P(y=1|x_4) \propto P(y=1)P(B=0|y=1)\,P(C=1|y=1) = \frac{3}{7} \times 0.33 \times 0.33 = 0.047$

$\Rightarrow \hat{y}_4 = 0$