Q.6.

As the formula for getting the new data is as given

$$P\left(x=F\mid y_1^1, y_1^2\right) = \frac{P\left(x=F\mid y_1^1\right) P\left(x=F\mid y_1^2\right) P\left(x=F\mid y_0^1, y_0^2\right)}{P(F\mid y_0^1) P(F\mid y_0^2)} \quad - \textcircled{1}$$

∴ from ① we can get the value of $P\left(x=F\mid y_0^1, y_0^2\right)$ as

$$P\left(x=F\mid y_0^1, y_0^2\right) = \frac{P\left(x=F\mid y_1^1, y_1^2\right) \times P\left(F\mid y_0^1\right) P\left(F\mid y_0^2\right)}{P(x=F\mid y_1^1) P(x=F\mid y_1^2)} \quad - \textcircled{2}$$

using eq ② we can get the values for $x=F$, $x=M$ and $x=A$.

Now

• for $x = F$

$$P\left(x=F\mid y_0^1, y_0^2\right) = \frac{P\left(x=F\mid y_1^1, y_1^2\right) \times P\left(F\mid y_0^1\right) P\left(F\mid y_0^2\right)}{P(x=F\mid y_1^1) P(x=F\mid y_1^2)}$$

$$= \frac{0.88 \times 0.4 \times 0.6}{0.7 \times 0.8}$$

$$P\left(x=F\mid y_0^1, y_0^2\right) = 0.3771$$