1) False.

Reason: Y is probabilistic in Naive Bayes.

So this clearly means that there will be an unavoidable error ~~and even if~~. and even if $P(Y)$ is nearly perfect, we can't predict Y.

Also, Naive Bayes is linear. This adds on to the proof that it can't give a perfect $P(Y)$

3) 1) TP = 0.9
TN = 0.97
FN = 0.1
FP = 0.03

E → Covid infected
E_+ → Event of testing tve.

$$P(E|E_+) = \frac{P(E_+|E) * P(E)}{P(E_+)}$$

$$= \frac{0.9 \times 0.08}{0.9 \times 0.08 + 0.92 \times 0.03} = \frac{0.072}{0.072 + 0.0276}$$

$$\approx \frac{0.072}{0.1} = 0.72$$

2) Population's of 0.6 has the disease.

E → Person has the disease,

$$P(E) = \frac{0.9 \times 0.6}{0.9 \times 0.6 + 0.4 \times 0.03} = \frac{0.54}{0.54 + 0.012}$$

$$= 0.977$$