2) Given

$P(C) = 0.01$ (Having cancer)

$P(B) = P(C)^c$ (Benign tumor - not cancer)

$= 1 - P(C) = 1 - 0.01 = 0.99$

$P(C/CT) = 0.8$ (cancerous tumor detected)

$P(NC/B) = 0.9$ (Benign tumor detection not cancer)

$\therefore P(C/B) = 0.1$

Using Bayes rule

$\cancel{P(CT/C) = \frac{P(P/C)\,P(C)}{P}}$ $\quad P(CT/C) = \frac{P(C/CT)\,P(C)}{P(C)}$

$$\Rightarrow P(CT/C) = \frac{P(C/CT)\,P(C)}{P(C/CT)\,P(C) + P(C/B)\,P(B)}$$

$$= \frac{0.8 \times 0.01}{[0.8 \times 0.01] + [0.1 \times 0.99]}$$

$$= \frac{0.008}{0.008 + 0.099} = 0.0747$$

$$\cong 0.075$$

Hence, the probability of patient having cancer if test is positive is 0.075

$$\boxed{P(CT/C) = 0.075 = 7.5\%}$$ (OR)

$$P(CT/C) = 0.0747$$