

Problem 21

<u>Condition (x)</u>	<u>P<sub>r</sub>(x)</u>	<u>P<sub>r</sub>(D x)</u>	<u>P<sub>r</sub>(D<sup>c</sup> x)</u>
Critical (C)	.1	.4	1-.4=.6
Serious (S)	.3	.1	.9
Stable (T)	1-.1-.3=.6	.01	.99

Bayes' Theorem

$$P_r(A|B) = \frac{P_r(A \cap B)}{P_r(B)} = \frac{P_r(B|A) \cdot P_r(A)}{P_r(B)}$$

$$P(S|D^c) = \frac{P(D^c|S) \cdot P(S)}{P(D^c|C) \cdot P(C) + P(D^c|S) \cdot P(S) + P(D^c|T) \cdot P(T)}$$

$$= \frac{.9(.3)}{.6(.1) + .9(.3) + .99(.6)}$$

$$= .29$$

**B**