98. Let $X_1, X_2, X_3$ be a random sample from a discrete distribution with probability function

$$p(x) = \begin{cases} 
1 & \text{for } x = 0 \\
\frac{2}{3} & \text{for } x = 1 \\
0 & \text{otherwise}
\end{cases}$$

Determine the moment generating function, $M(t)$, of $Y = X_1X_2X_3$.

(A) $\frac{19}{27} + \frac{8}{27}e^t$

(B) $1 + 2e^t$

(C) $\left(\frac{1}{3} + \frac{2}{3}e^t\right)^3$

(D) $\frac{1}{27} + \frac{8}{27}e^{3t}$

(E) $\frac{1}{3} + \frac{2}{3}e^{3t}$

99. An insurance policy pays a total medical benefit consisting of two parts for each claim. Let $X$ represent the part of the benefit that is paid to the surgeon, and let $Y$ represent the part that is paid to the hospital. The variance of $X$ is 5000, the variance of $Y$ is 10,000, and the variance of the total benefit, $X + Y$, is 17,000.

Due to increasing medical costs, the company that issues the policy decides to increase $X$ by a flat amount of 100 per claim and to increase $Y$ by 10% per claim.