MLC Question 49

$$P = \frac{\bar{A}_{\overline{xy}}}{\bar{a}_{xy}}$$

$$= \frac{\bar{A}_x + \bar{A}_y - \bar{A}_{xy}}{\bar{a}_{xy}}$$

T(x) and T(y) independent

$\mu_x(t) = \mu_y(t) = .07$

$\delta = .05$

$$\bar{a}_s = \int_0^\infty v^t \, {}_tp_s \, dt$$

$$= \int_0^\infty e^{-\delta t} e^{-\mu_s(t) t} dt$$

$$= \frac{1}{\mu_s + \delta}$$

$$\bar{A}_s = 1 - \delta \bar{a}_s$$

$$= 1 - \delta \left(\frac{1}{\mu_s + \delta} \right)$$

$$= \frac{\mu_s}{\mu_s + \delta}$$

$$\bar{A}_x = \frac{\mu_x}{\mu_x + \delta} = \frac{.07}{.07 + .05} = .5833 = \bar{A}_y$$

$${}_tp_{xy} = {}_tp_x \cdot {}_tp_y = e^{-\mu_x t} \cdot e^{-\mu_y t}$$

$$= e^{-(\mu_x + \mu_y)t} = e^{-.14t}$$

$\mu_{xy} = .14$

$$\bar{A}_{xy} = \frac{.14}{.14 + .05} = .7368$$

$$\bar{a}_{xy} = \frac{1}{\mu_{xy} + \delta} = \frac{1}{.14 + .05} = 5.2632$$

$$P = \frac{.5833 + .5833 - .7368}{5.2632}$$

$= .08$ (C)