Q2] A]

$$P = \begin{bmatrix} 0.5 \\ 1 \\ 0.6 \end{bmatrix} \begin{matrix} x_1 \\ x_2 \\ x_3 \end{matrix} \qquad Q = \begin{bmatrix} 1 & 0.6 \end{bmatrix} \\ \quad\quad y_1 \quad y_2$$

$$R = \begin{matrix} x_1 \\ x_2 \end{matrix} \begin{bmatrix} 0.7 & 0.5 \\ 0.8 & 0.4 \end{bmatrix} \qquad S = \begin{matrix} y_1 \\ y_2 \end{matrix} \begin{bmatrix} 0.9 & 0.6 & 0.2 \\ 0.1 & 0.7 & 0.5 \end{bmatrix}$$
$$\quad\quad\quad y_1 \quad\quad y_2 \qquad\qquad\qquad z_1 \quad z_2 \quad z_3$$

$$T = P \times Q$$

$$= \begin{matrix} x_1 \\ x_2 \\ x_3 \end{matrix} \begin{bmatrix} (x_1,y_1) & (x_1,y_2) \\ (x_2,y_1) & (x_2,y_2) \\ (x_3,y_1) & (x_3,y_2) \end{bmatrix} = \begin{matrix} x_1 \\ x_2 \\ x_3 \end{matrix} \begin{bmatrix} (0.5,1) & (0.5,0.6) \\ (0.1,1) & (0.1,0.6) \\ (0.6,1) & (0.6,0.6) \end{bmatrix}$$
$$\quad\quad y_1 \quad\quad y_2 \qquad\qquad\qquad y_1 \quad\quad y_2$$

$$T = \begin{matrix} x_1 \\ x_2 \\ x_3 \end{matrix} \begin{bmatrix} 0.5 & 0.5 \\ 1 & 0.6 \\ 0.6 & 0.6 \end{bmatrix}$$
$$\quad\quad y_1 \quad\quad y_2$$

$$U = R \cdot S$$
$$= \begin{matrix} x_1 \\ x_2 \end{matrix} \begin{bmatrix} 0.7 & 0.5 \\ 0.8 & 0.4 \end{bmatrix} \cdot \begin{matrix} y_1 \\ y_2 \end{matrix} \begin{bmatrix} 0.9 & 0.6 & 0.2 \\ 0.1 & 0.7 & 0.5 \end{bmatrix}$$
$$\quad\quad y_1 \quad y_2 \qquad\qquad z_1 \quad z_2 \quad z_3$$

$$U = max(\,min(R_i, S_i)\,) \; \forall i$$

$$U = \begin{bmatrix} 0.7 & 0.6 & 0.5 \\ 0.8 & 0.6 & 0.4 \end{bmatrix}$$

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Q2] A)

$V = RS$

$$= \begin{array}{c} x_1 \\ x_2 \end{array} \begin{bmatrix} 0.7 & 0.5 \\ 0.8 & 0.4 \end{bmatrix} \cdot \begin{array}{c} y_1 \\ y_2 \end{array} \begin{bmatrix} 0.9 & 0.6 & 0.2 \\ 0.1 & 0.7 & 0.5 \end{bmatrix}$$

$$\begin{array}{ccc} y_1 & y_2 & \\ & & z_1 \quad z_2 \quad z_3 \end{array}$$

$V = \max(\text{product } (R_i, S_i)) \; \forall i$

$$V = \begin{bmatrix} 0.63 & 0.42 & 0.25 \\ 0.72 & 0.48 & 0.20 \end{bmatrix}$$