3. $H(A) = -0.5 \log_2(0.5) - 0.5 \log_2(0.5) = 1$

$H(B) = -\frac{7}{8} \log_2\left(\frac{7}{8}\right) - \frac{1}{8} \log_2\left(\frac{1}{8}\right) = 0.54$

$$H(A|B) = -\left(\frac{1}{2} \cdot \log_2 \frac{1}{2} - \frac{1}{2} \cdot \log_2 \frac{7}{8}\right) - \left(0 \log_2 0 - 0 \cdot \log_2 \frac{1}{8}\right)$$
$$-\left(\frac{3}{8} \cdot \log_2 \frac{3}{8} - \frac{3}{8} \cdot \log_2 \frac{3}{8}\right) - \left(\frac{1}{8} \log_2 \frac{1}{8} - \frac{1}{8} \cdot \log_2 \frac{1}{8}\right)$$
$$= 0.86$$

$H(A,B) = -\frac{1}{2} \cdot \log_2 \frac{1}{2} - 0 \cdot \log_2 0 - \frac{3}{8} \log_2 \frac{3}{8} - \frac{1}{8} \log_2 \frac{1}{8} = 1.41$

$I(A;B) = H(A) - H(A|B) = 0.14$