① For Tuple T

$$Info(T) = -\sum_{i=1}^{n} P_i \log_2(P_i)$$

$$Info(T) = -5/10 \log 2(5/10) - 5/10 \log 2(5/10)$$

$$= 1.0 \text{ bit}$$

② $$Info_{VD}(T) = 3/10 * (-3/3 \log_2 3/3) + 4/10 * (-2/4 \log_2 2/4 - 2/4 \log_2 2/4) + 3/10 * (-3/3 \log_2 3/3)$$

$$= 0.4 \text{ bits}$$

$$Info(T) - Info_{VD}(T) = 1.0 - 0.4 = 0.6 \text{ bits}$$

Gain

③ None Observation = 4
Many Observation = 3
Some Observation = 3
Total Observation = 10

Using Simple log Algebra Method

Entrophy H(Taste/Visual Defect == Some) $= -3/3 \log(3/3) - 0 \log_2(0)$

$= 0$

Entrophy H(Taste/Visual Defect == none)

$= -2/4 \log_2(2/4) - 2/4 \log_2(2/4)$

$= -1/2 - 1/2$

$= -1$