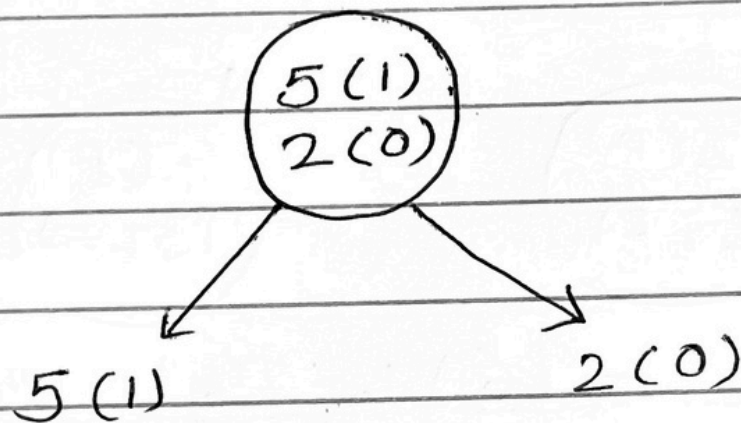


Entropy

$$E = -P_{(+)} \log_2 P_{(+)} - P_{(-)} \log_2 P_{(-)}$$

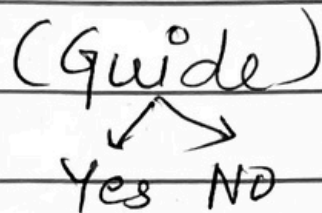
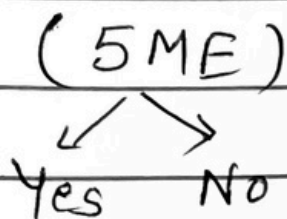
probability of
+ve class

probability of
-ve class

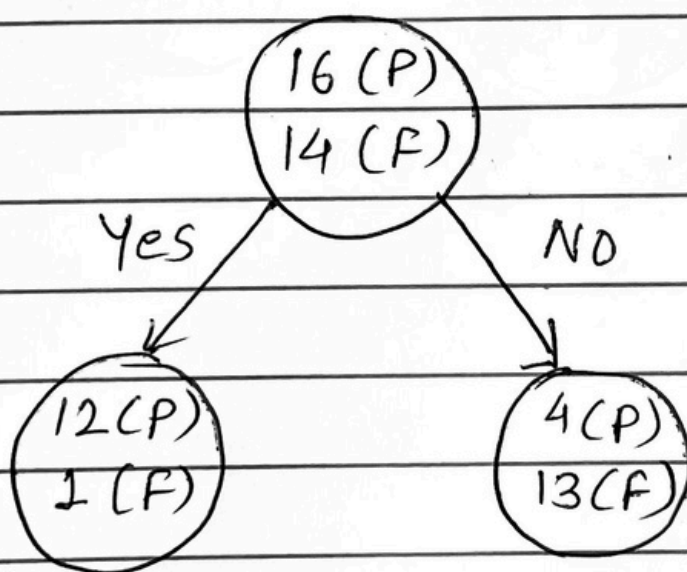


$$\rightarrow -\left(\frac{5}{7}\right) \log_2 \left(\frac{5}{7}\right) - \left(\frac{2}{7}\right) \log_2 \left(\frac{2}{7}\right)$$
$$= 0.85$$

2 features.



1) 5ME



$$E(\text{Parent}) = -\left(\frac{16}{30}\right) \log_2 \left(\frac{16}{30}\right) - \left(\frac{14}{30}\right) \log_2 \left(\frac{14}{30}\right)$$
$$= 0.99$$

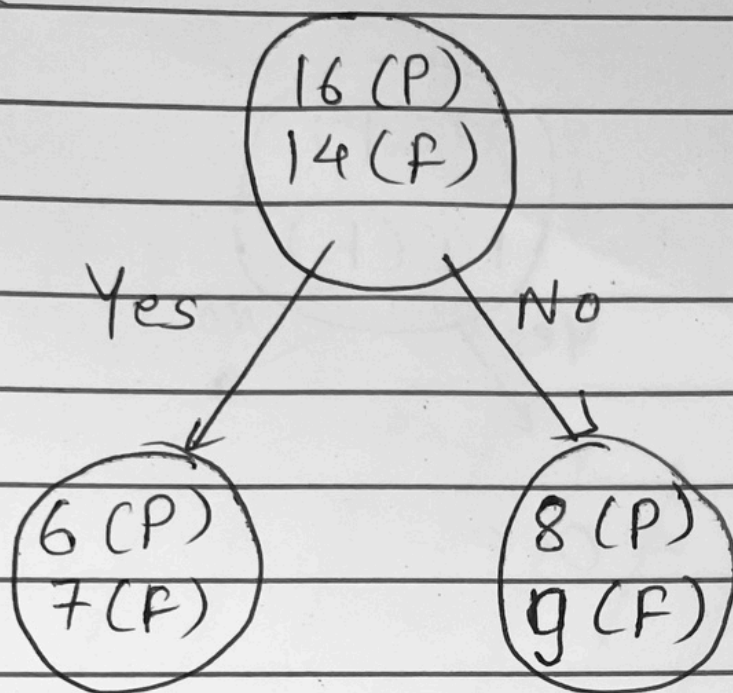
$$E(\text{Parent} | 5ME = \text{Yes}) = 0.39$$

$$E(\text{Parent} | 5ME = \text{No}) = 0.79$$

$$\rightarrow \frac{13}{30} \times 0.39 + \frac{17}{30} \times 0.79 = 0.62$$

$$\rightarrow 0.99 - 0.62 = \boxed{0.37} \quad 14$$

2) Guide



$$E(\text{Parent}) = 0.99$$

$$E(\text{Parent} / \text{Guide} = \text{Yes}) = 0.994$$

$$E(\text{Parent} / \text{Guide} = \text{No}) = \cancel{0.817} 0.996$$

$$\rightarrow \frac{13}{30} \times 0.994 + \frac{17}{30} \times 0.996$$

$$= 0.43 + 0.56$$

$$\approx 0.99$$

$$\rightarrow 0.99 - 0.89 = 0.00 \text{ IG}$$

\therefore

$$0.37 > 0.00$$