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Suly \rightarrow B.D

Course \rightarrow MSC DS.

Ques.

Category

Document

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+

- - - -

?

predictable with no Fun

Ans

Priors : $P(-) = 3/5$, $P(+) = 2/5$

Conditional Probabilities

$$P(\text{predictable} | -) = \frac{1+1}{14+20} = \frac{2}{34} = \frac{1}{17}$$

$$P(\text{with} | -) = \frac{0+1}{34} = \frac{1}{34}$$

$$P(\text{no} | -) = \frac{1+1}{34} = \frac{2}{34} = \frac{1}{17}$$

$$P(\text{fun} | -) = \frac{0+1}{34} = \frac{1}{34}$$

$$P(\text{predictable} | +) = \frac{0+1}{9+24} = 1/33$$

$$P(\text{with} | +) = \frac{0+1}{9+24} = \frac{1}{33}$$

$$P(\text{no} | +) = \frac{0+1}{33} = 1/33$$

$$P(\text{Fun} | +) = \frac{1+1}{33} = 2/33$$

Choosing the category:

$$P(+ | \text{test}) = P(\text{predictable} | +) \times P(\text{with} | +) \times P(\text{no} | +) \times P(\text{Fun} | +) \times P(+)$$

$$= (1/33)(1/33)(1/33)(2/33)(75)$$

$$= 4/5929605 \Rightarrow 6.7458119e^{-7}$$

$$\approx 0.0000007$$

$$P(- | \text{test}) = (1/12)(1/34)(1/12)(1/34)(3/5)$$

$$= \frac{3}{1670420} \approx 1.79595551e^{-6}$$

$$\approx 0.000002$$

Thus, we can say that the category of test document will be negative (-).