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Ans to QNo - 2

a

Prior probability means the data or information which already exists in the nature, before any stastical calculation is performed.

b

Posterior probability is the probability which we achieve after performing some calculations and ~~we~~ then we use this posterior probability to ~~perfor~~ calculate other data.

b

Joint probability means the probability ~~occurence~~ of two events happening/occuring together,

And marginal probability simply refer to the probability of an event occuring.

<u>Joint</u> ~~Mag~~ <u>Marginal</u>

$P\left(A \cap B\right)$ $P(A)$

c

Let, Identifying as risky = ~~Ros~~ I
Risky voice command = R.

Given, $P(R) = 0.001395$, $P(I|R') = 0.02$, $P(I|R) = 1$

$$P(R|I) = ?$$

$$\therefore P(R|I) = \frac{P(I|R) \times P(R)}{P(I)}$$

$$= \frac{P(I|R) \times P(R)}{P(I|R) \times P(R) + P(I|R') \times P(R')}$$

$$= \frac{1 \times 0.001395}{(1 \times 0.001395) + (0.02 \times 0.998605)}$$

$$= 0.065$$

$$= 6.5\% \qquad (Ans)$$

Ans. to Q No - 3

Win = yes

$P($ ~~Chelsea = Winning~~ $\mid$ Opponent = Liv $\wedge$ stadium = Stamford Bridge $\wedge$ weather = sunny $)$

Now, $P(Yes) = \frac{8}{8} = 1$

~~ﬀﬁ~~ $P(Liv \mid Yes) = \frac{3}{3} = 1$

$P(Stamford Bridge \mid Yes) = \frac{4}{4} = 1$

$P(sunny \mid yes) = \frac{3}{3} = 1$

$\therefore P = 1 \times 1 \times 1 \times 1 = 1$

Again,

$P($ Win = no $\mid$ Liv $\wedge$ Stamford Bridge $\wedge$ sunny $)$

$= P($ no $\mid$ Liv $) \times P($ no $\mid$ Stamford Bridge $)$

$\times P($ no $\mid$ sunny $) \times P($ no $)$

$= \frac{0}{3} \times \frac{0}{4} \times \frac{0}{3} \times 0 = 0$

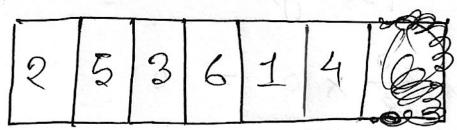So, as $1 > 0$, we can predict that, Chelsea
is more likely to WIN.

Ans to Q.No-4

$\alpha = 8 \ \beta = 1000$

$\alpha = -1000$
$\beta = 8$

$\alpha = 8$
$\beta = 1000$

$\alpha = 8$
$\beta = 1000$

$\alpha = 8$
$\beta = 1000$

$\alpha = -1000$
$\beta = 8$

$\alpha = 8$
$\beta = 1000$

$\alpha = 8$
$\beta = 1000$

4   8   2   9   2   1   -1   5   -2   4   6   3   2

∴- The branches we are needed to be pruned

⟹ O, H, Q, R, J, V, W.

Ans. to Q No - 5

$$\underline{\underline{a}}$$

Chromosome - 1

| 2 | 5 | 3 | 6 | 1 | 4 | |

Chromosome - 2

| 5 | 1 | 2 | 6 | 4 | 3 | |

Fitness for chromo-1 :
$$\overset{5}{\cancel{8}} + \overset{4}{\cancel{6}} + \overset{2}{\cancel{8}} + 1 + 1 + 0$$

$$= \cancel{2} \; 13$$

Fitness for chromo-2 :
$$\overset{5}{\cancel{8} \cdot \cancel{4}} + 2 + 2 + 2 + \overset{}{\cancel{8}} \, 0 + 0$$

$$= \cancel{2} \; 11$$

c

$$
\begin{array}{ccc|ccc}
2 & 5 & 3 & 6 & 1 & 4 \\
5 & 1 & 2 & 6 & 4 & 3
\end{array}
$$

∴ children 1 = 2 5 3 6 4 3

children 2 = 5 1 2 6 1 4

$$f(c_1) = \cancel{20 \cdot} 5 + 4 + 2 + 2 + 0 + 0 = 13$$

$$f(c_2) = 4 + 2 + 3 + 1 + 1 + 0 = 11$$

$$d$$

mutated

2	5	3	~~1~~ $\cancel{X}$	4	3

c-1:

5	$\cancel{X}$ 6	2	6	1	4

c-2:

mutated

Ans. to Q No - 1

a

Variables are ⟹ P, Q, R, S, T

b

Domains are ⟹ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

c

Constraints:

i) Numbers are needed to be placed incase of the alphabets.

ii) We have to place such a number on T so that the unit place of the sum contains S.

iii) The sum of the whole calculation i.e the answer must contain the same digit as 'S' in the hundredth place.