

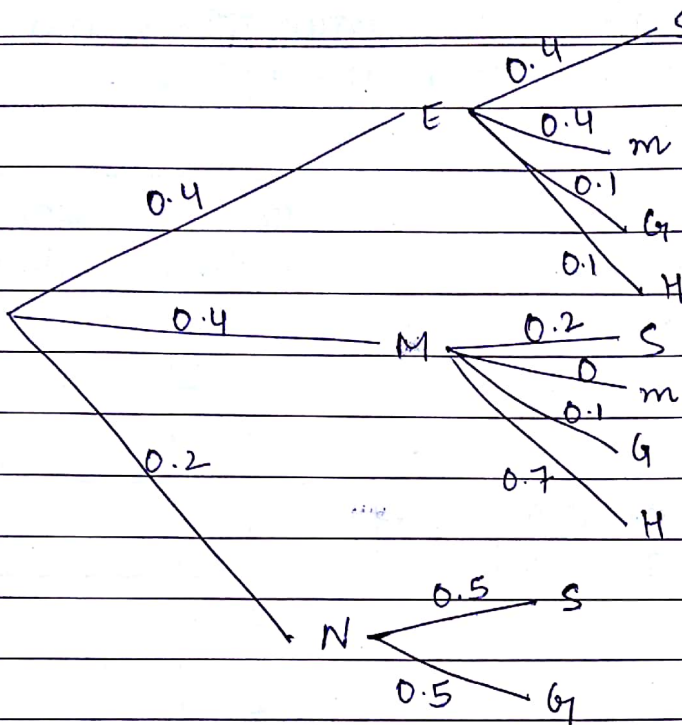
[Marks in circle]

Question 1

①

Solutions- Quiz!

Uncertain
land



- ⑩

E - Engineering
M - Medicine
N - None

S - software
m - management
G - government
H - healthcare

1)

~~P(S)~~

$$P[S|E] = 0.4$$

$$P[S|M] = 0.2$$

$$P[S|N] = 0.5$$

$$P[m|E] = 0.4$$

$$P[m|M] = 0$$

$$P[G|N] = 0.5$$

$$P[G|E] = 0.1$$

$$P[G|M] = 0.1$$

$$P[H|E] = 0.1$$

$$P[H|M] = 0.7$$

- ⑩

$$\begin{aligned} 2) \quad P[N] &= 1 - \{P[E] + P[M]\} \\ &= 1 - 0.4 - 0.4 \\ &= \boxed{0.2} \end{aligned}$$

- ⑩

using Total Probability Theorem

$$\begin{aligned}
 3) \quad P[S] &= P[S|E] \cdot P[E] + P[S|M] \cdot P[M] + P[S|N] \cdot P[N] \\
 &= (0.4 \times 0.4) + (0.4 \times 0.2) + (0.2 \times 0.5) \\
 &= 0.16 + 0.08 + 0.1 \\
 &= \boxed{0.34} \quad - (10)
 \end{aligned}$$

$$\begin{aligned}
 4) \quad P[M \cap S] &= P[M] \cdot P[S|M] \\
 &= (0.4 \times 0.2) \\
 &= \boxed{0.08} \quad - (10)
 \end{aligned}$$

$$\begin{aligned}
 5) \quad P[E|S] &= \frac{P[S|E] \cdot P[E]}{P[S]} \quad (\text{using Bayes Theorem}) \\
 &= \frac{0.4 \times 0.4}{0.34} = \boxed{0.47} \quad - (10)
 \end{aligned}$$

$$\begin{aligned}
 6) \quad P[N|S] &= \frac{P[S|N] \cdot P[N]}{P[S]} \\
 &= \frac{0.5 \times 0.2}{0.34} = \frac{0.1}{0.34} = \boxed{0.29} \quad - (10)
 \end{aligned}$$

	Engineering	Medicine	None
$P[E] P[G E]$	$P[M] P[G M]$	$P[N] P[G N]$	
$\Rightarrow 0.4 \times 0.1$	0.4×0.1	0.2×0.5	
$= 0.04$	0.04	0.1	

Thus one having no degree are in government services with highest percent, 10%.

Question 2

Given $A \cap C = \emptyset$

$$B \cap C = \emptyset$$

And $S - A = B \quad \therefore S = A + B$

or we can say $S = A \cup B$

- Thus $\{A, B\}$ is the ~~set~~ event space for sample space S , also C doesn't lie in the same sample space.

Explanation can be through venn diagram as well.