

1.9.1-15.2413

Question - 01: Write the steps to perform Markov hidden model with explaining an example of problem solving? Explain the difference between viterbi and forward HMM.

⇒

• Difference between viterbi, and Forward HMMs

Viterbi	Forward
Viterbi gives probability of the most likely sequence of states.	Forward-Backward gives marginal probability for each individual state.
Viterbi is a dynamic programming algorithm	It is also dynamic but difficult
The viterbi Algorithm has been used in space communications	The forward algorithm is mostly used in application that need to determine the probability

ID: 191-15-2913

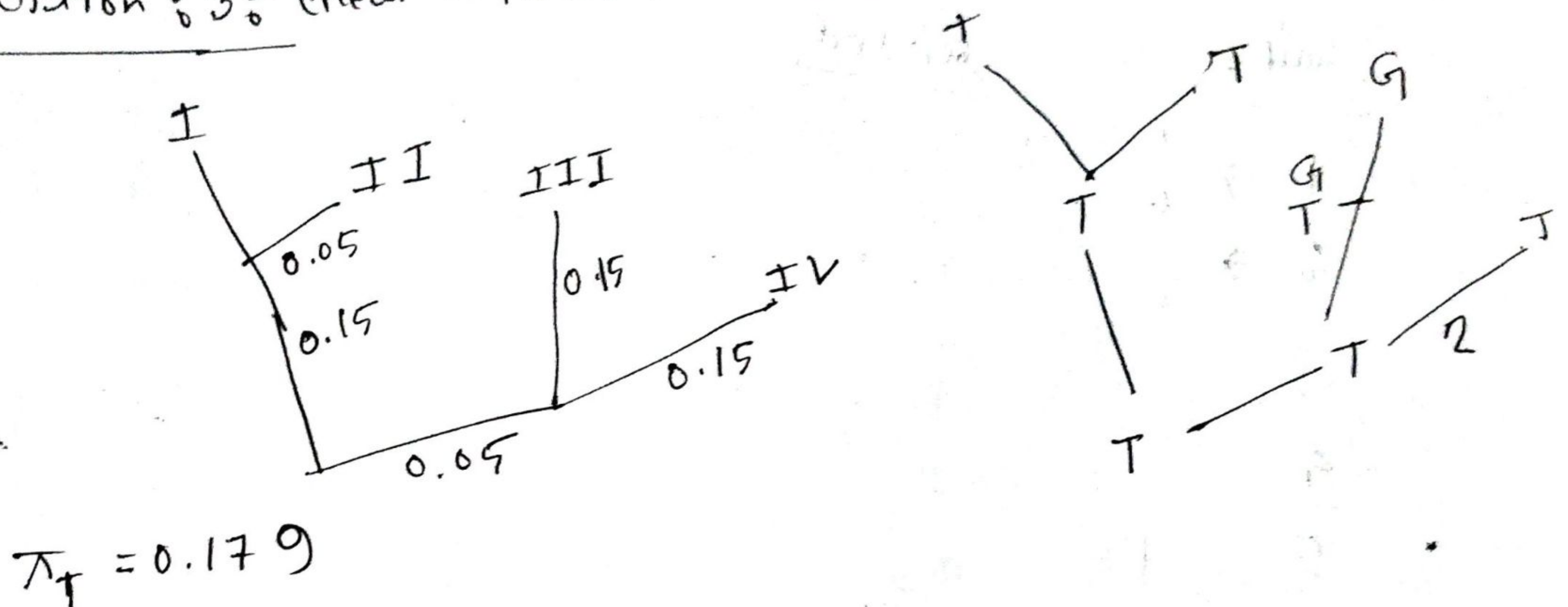
Question - 2 : Compare Subfix Tree and Subfix array with your own word.

⇒

Subfix Array	Subfix Tree
The subfix array is slower than Subfix Tree.	The Subfix Tree is faster and lighter than Subfix Array.
The subfix array takes minimum space.	The Subfix Tree takes large space.
It is used also in search engine but it is not complex and it is used widely.	It is used to index DNA or optimized web search engine but it is complex.
A subfix array is a sorted array of all subfixes of a given string.	The subfix tree which is a compressed tree of all subfixes of the given text.

191-15 - 2913

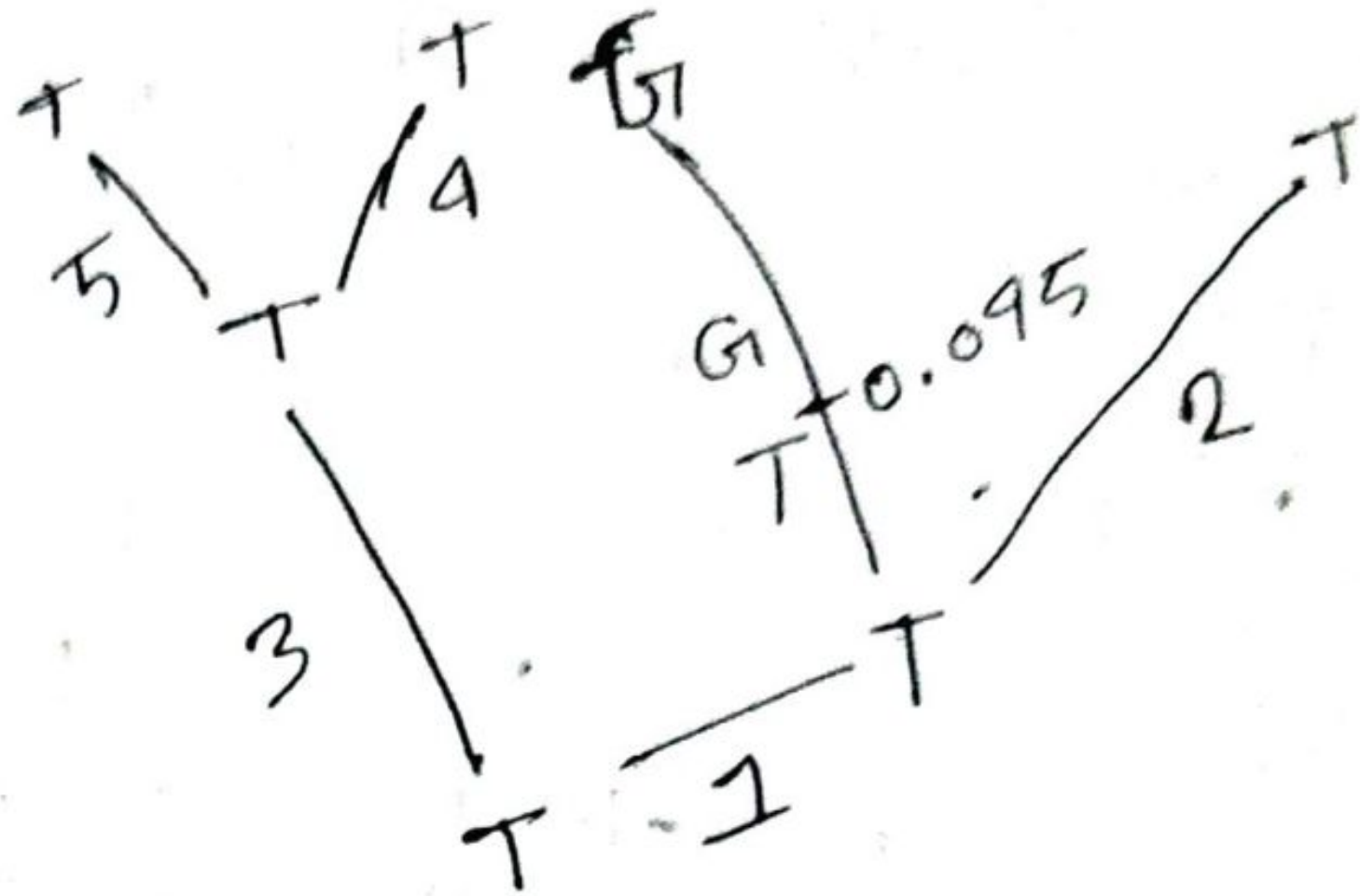
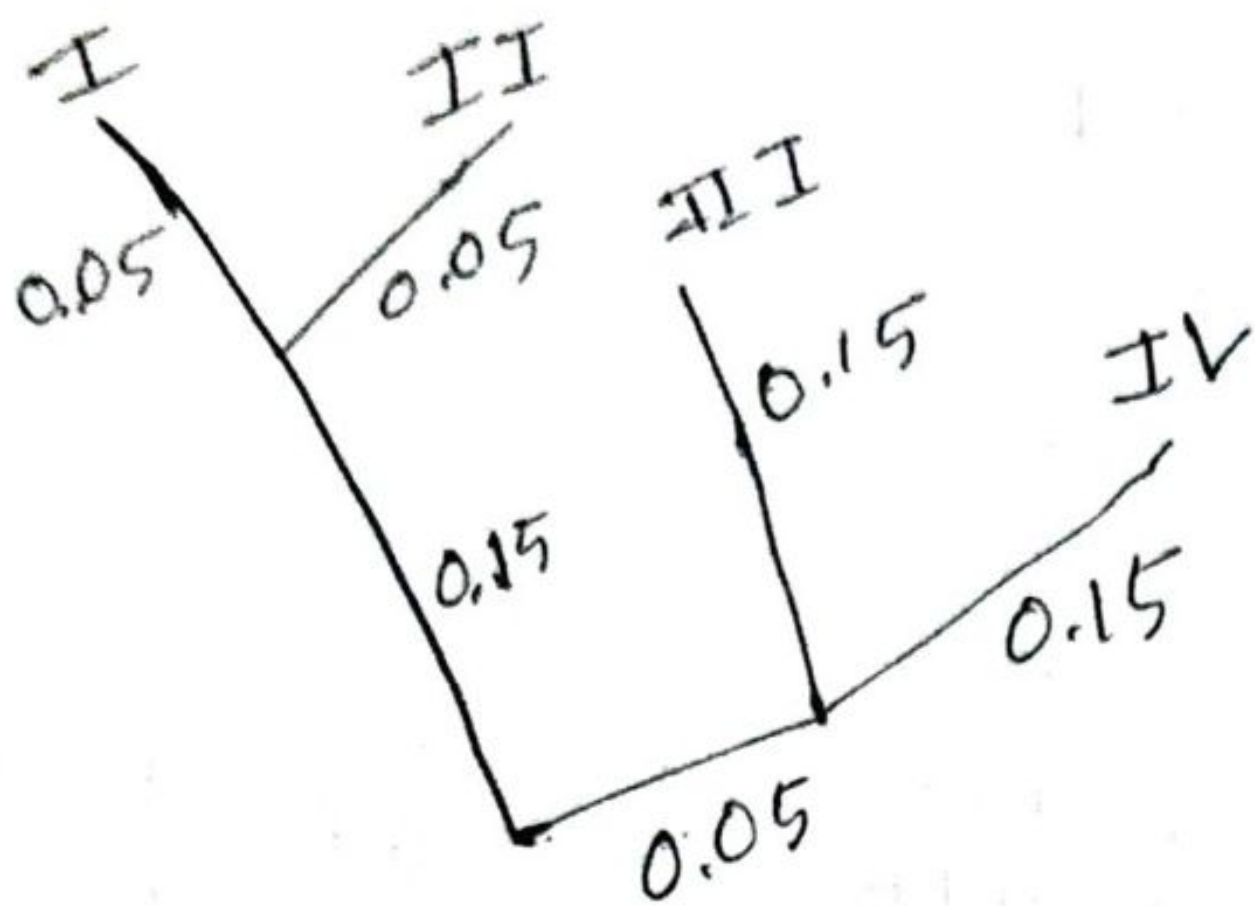
Question 3: Create a problem or scenario and solve it with MLE.



ID: 191-15-2913

maximum likelihood Estimation

$$\begin{aligned} G|T &= 0.15 \\ T|T &= 0.095 \\ G|G &= 0.105 \end{aligned}$$



$$\pi_T = 0.179$$

$(T \text{ to } T), (T \text{ to } \underline{T}), (T \text{ to } T), (T \text{ to } T), (T \text{ to } T),$
 $(T \text{ to } G)$

$$\begin{aligned} &= 0.179 \times e^{0.05x-1.355} \times e^{0.15x-1.355} \times e^{0.15x-1.355} \times e^{0.05x-1.355} \\ &\times e^{0.05x-1.355} \times e^{0.095x-1.355} \times e^{0.105x-1.355} \times 0.509 \end{aligned}$$

$$= 0.04715829145$$

Answer