Algorithms and Bioinformatics
Comparative Genomics
TD 3

Question 12. Give the recursive relation in the Dynamic Programming algorithm of Maximum Agreement Subtrees.

Question 13. Give an FPT algorithm based on color-coding for the problem below. Bonus: show that it is NP-complete.

> **Cheap Subtree**
>
> **Input:** A complete binary tree T with a set L of leaves,
> a graph $G = (V, E)$,
> a cost function $c : V \times L \to \mathbb{N}$
> **Param.:** $k = |L|$
> **Output:** A subset $V' \subseteq V$ such that:
> - $G[V']$ is isomorphic to T,
> - the total cost of the mapping betwen V and L is minimal.

Question 14. Same question:

> **Polychrome Matching**
>
> **Input:** A graph G with an r-edge coloring
> **Param.:** r
> **Output:** A maximum-size set of independent edges of G with pairwise-distinct colors.

Question 15. Same question:

> **Disjoint r-Subsets**
>
> **Input:** Size-r subsets $X_1, \dots X_m$ of $[n]$, integer k
> **Param.:** $k + r$
> **Output:** k pairwise disjoint subsets $X_{i_1}, \dots X_{i_k}$

Question 16. Fill-in the missing steps of the iterative compression algorithm of Odd Cycle Transversal.