COMPUTER SCIENCE TRIPOS Part II – 2012 – Paper 7

3 Bioinformatics (PL)

(*a*) Considerable recent Bioinformatics research has focused on *phylogenetics.*

    (*i*) What is the motivation for this work?   [1 mark]

    (*ii*) Describe with the aid of examples *two* different techniques for phylogeny. In each case discuss the issues of complexity and performance.

[4 marks each]

(*b*) Considerable recent Bioinformatics research has focused on *structure prediction from sequence data.*

    (*i*) Describe how you would build a hidden Markov model (HMM) to identify membrane segments in aminoacid sequences.   [6 marks]

    (*ii*) How you would assess the sensitivity and specificity performance of your HMM?   [5 marks]