## COMPUTER SCIENCE TRIPOS Part IB – 2024 – Paper 7

## 9 Further Human–Computer Interaction (afb21)

- (a) Briefly explain, including quantitative estimates, how the information content of English text compares to the information rate that could theoretically be communicated using a computer keyboard. [2 marks]
- (b) How could the relationship you have described be used in a design to enter text either more quickly, or with less effort from the user? [2 marks]
- (c) Consider an operating system command line interpreter that interprets text commands on a probabilistic basis. Explain how each of the elements of Bayes' theorem (Posterior, Likelihood, Prior and Evidence) would be applied in the implementation of this interpreter. [8 marks]
- (d) Give one example of a well-known bias or heuristic that might be applied by users of a command line interpreter when they need to make rapid decisions. Explain, using Bayes theorem and/or information theory, what could make that strategy effective in the above scenario. [4 marks]
- (e) Explain how the attention investment model of abstraction use might relate to the use of more or less abstract strategies in the scenario you have described. [4 marks]