

COMPUTER SCIENCE TRIPOS Part IB – 2024 – Paper 5

3 Computer Networking (awm22)

- (a) Define the terms latency and capacity as applied to communication channels [2 marks]
- (b) Is there a strict relation between the two? [1 mark]
- (c) Imagine a packet-based network channel, with fixed bandwidth and fixed latency, providing service to a transport protocol.
- (i) In this context, describe a basic system that provides reliable transmission of packet data. Include a description of the essential features of your approach. [8 marks]
- (ii) The network channel will impact the effective throughput of your reliable transport protocol. Outline an example of why this occurs. [2 marks]
- (iii) Describe a straightforward extension to your protocol that would improve the performance of your transport protocol without changing the channel provided by the underlying network. [4 marks]
- (iv) In what circumstances might these improvements have only limited benefit? [3 marks]