

COMPUTER SCIENCE TRIPOS Part IB – 2024 – Paper 5

2 Computer Networking (awm22)

- (a) Physical line coding, for fiber or copper, discusses the design of systems that transform digital communications into an analog channel; the analog channel is often referred to as the physical layer.
- (i) Compare and contrast the two physical line coding systems: a pure scrambling system, and a pure block codec. [6 marks]
- (ii) For each of scrambler and block code, outline the disadvantages in their sole use. Then indicate how a hybrid schema can solve such drawbacks. [4 marks]
- (b) Wireless networking faces several challenges due to the physics of radio communications. Explain, with the use of illustration, two distinct collision-detection issues unique to wireless networks, and then describe a protocol-centered approach that will overcome each issue. [10 marks]