1 Digital Communications II - November 2005. Examinable Course Material

The current set of lectures (and the full handouts) are available from `http://www.cl.cam.ac.uk/Teaching/current/DigiCommII/`.

Of these, the topics that are specifically examinable are:

The Telephone Net It's structure, samples/signalling

The Internet Basics It's structure, packets, routing, datagrams

Asynchronous Transfer Mode It's structure, cells, VCs

Classic Simplistic Model of Communications OSI layers, alternatives

Some Systems Design Paradigms Optimisation, Tradeoffs etc

Naming and Addressing Telephone Numbers, IP addresses, DNS Names; alternatives/design tradeoffs

A List of common protocols TCP/IP, ATM and AALs, Signaling Protocols

Some Mapping onto system implementations sockets, OS v. user space

Routing Distance-Vector, Link-State, Multicast, Constraint-Based and stateful routing. Alternatives;design tradeoffs

Error Control Error Detection Codes/Checksums; acknowledgement/timeout/retransmission; round trip time estimation; alternatives/design tradeoffs

Flow Control Open Loop/Setup; Closed Loop/TCP Window Congestion Control; Rate Based Schemes; alternatives/design tradeoffs

Shared Media Networks CSMA/CD; CSMA/CA; Aloha; alternative/design tradeoffs

Switched Networks Time/Space switching of samples; packet switches; batcher-banyan; broadcast&knockout switches

Scheduling and Queue Management Algorithms Max-Min Fair Share; Generalized Processor Sharing and Admission Control equation; Queue/Buffer Management:Drop Tail, Random, etc; tradeoffs.

Traffic Engineering Load Balancing; Provisioning; Economics and Complexity Tradoffs.

Past year exam questions are a pretty accurate guide still and can be found at: `http://www.cl.cam.ac.uk/tripos/t-DigitalCommunicationII.html`