

COMS3200

Week 13 Exam Overview & Revision

School of Information Technology and Electrical Engineering
The University of Queensland

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Outline

- Exam
- Revision
 - Important concepts
 - Protocols you should know

2

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Exam

- Exam date – 5 November, 2011
- Exam covers
 - Lecture material
 - Tutorial material
- Open Book – any materials, any calculator
- Answer 10 of 12 Questions, each 6 marks
- 60 marks total, 2 hours (= 2mins/mark)
 - Best 10 questions will count
- Answer in the spaces provided on the exam paper

3

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Open book exam

- Open book exam – anything on paper (books, notes etc) permitted
- any calculator
- copies of exams are on the library web site
- 2007 exam was last time I lectured – closest to this year’s exam
- The exam emphasises quantitative problems more than explanations of theory, but has aspects of both.

4

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Consultations

- A couple of consultation sessions will be held prior to the exam
- Thursday 3 November 1-2pm, 78-622
- Friday 4 November 1-3pm, 78-622

- You can also send queries by email or newsgroup, may take up to 24 hours to respond.

5

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Other exam issues?

Any Questions?

6

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Revision

Important concepts

7

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Week 1

- Network topologies
- Protocol stacks
- Services vs Protocols
- Connection-oriented vs connectionless
- OSI Reference Model vs TCP/IP Model
- Standards Bodies

- Tutorial 1, esp Q2, Q3, Q4, Q5

8

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Week 2

- Message Passing
 - Blocking vs non-blocking
- Remote procedure call
 - RPC semantics
 - Idempotent operations
- Data representations
 - Big-endian vs Little-endian

- Tutorial 2: esp Q2,4,5,7

9

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Week 3

- UDP
- TCP
- Headers
- Connection establishment and teardown
- Flow control
- Sliding Window Protocol
 - Tutorial 3, esp Q3, Q5

10

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Week 4

- Physical Layer
- Fundamental Theory
 - Nyquist, Shannon limits
- Signals, Spectrum, Modulation
- Transmission Media
- Multiplexing, Switching
- Example physical layer protocols
- Tutorial 4, esp Q 1,2,4, 5
(not Q7, not Q8)

11

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Week 5

- Link Layer functionality
- Framing
 - HDLC, bit-stuffing
- Error detection
 - CRC
- Reliable delivery
- Flow Control
 - Tutorial 5, esp. Q2, Q3, Q6, Q7, Q8

12

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Week 6

- Medium-Access Sub-layer
 - Multiple-access protocols
 - Collision Based protocols
 - Aloha, Slotted Aloha, CSMA, CSMA/CD
 - Collision Free Protocols
 - WDM and WLAN protocols
- Tutorial 6, esp Q2, Q3

13

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Week 7

- MAC Layer
- IEEE 802 standards
- Internetworking
 - Devices for interconnecting networks:
 - Repeaters, Bridges, Hubs
 - Switches, Routers
- Virtual LANs
- Two Network Models:
 - Connection-oriented Virtual Circuit Networks
 - Connectionless Datagram Networks
- Tutorial 7, MAC: esp Q1, Q3
- Tutorial 7, Internet, esp. Q1, Q2, Q3

14

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Week 8

- Internet Protocol (IP)
 - Packet format, Fragmentation, Addressing
 - Subnets
 - NAT
- Internet Control Message Protocol (ICMP)
- Address Resolution Protocol (ARP)
- IPv6
 - Tutorial 8, esp. Q1, Q2, Q3, Q8, Q9

15

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Week 9

- Routing
 - Distance Vector Routing
 - Link State Routing
 - Dijkstra's algorithm
 - Broadcast routing
 - Multicast routing
- Routing in mobile or dynamic networks
 - Delivery of packets to Mobile Hosts
 - Introduction to routing in Ad-hoc networks
- Tutorial 9, esp. Q3, Q4, Q5

16

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Week 10

- Multimedia applications
- Digital audio
- Streaming audio
- Voice over IP
- Video servers
- Distribution networks
- Peer to Peer Networks
- Tutorial 10, esp. Q2, Q3, Q4, Q8

17

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Week 11

- QoS requirements and techniques for Multimedia Applications
- Transport protocols vs QoS
 - TCP, UDP, RTP
- QoS in ATM networks
- QoS models for the Internet
 - Integrated Services, IntServ, Tspec. RSVP
 - Differentiated Services
 - MultiProtocol Label Switching
- Tutorial 11, esp. Q2, Q3

18

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Week 12

Aspects of Security

- Encryption
 - Secret Key (DES)
 - Public Key (RSA)
- Authentication Protocols
- Message Integrity - Digital signatures
- Key Distribution - Public Key Certificates
- Security Protocols (IPSec, TLS/SSL)
 - Firewalls
- Tutorial 12, esp. Q1, Q2, Q4, Q5

19