Exam One

Study Guide

Prior to the exam, it would be prudent for you to be familiar with the assigned readings, the class lectures, and the module assignments. This Study Guide is designed to help focus your studies on the most important aspects of Module One. Note that all of the vocabulary terms are taken from the text. While some questions are taken from, or based upon, the text and some are also taken from the assignments.

Best of luck!

Part One	Textbook Questions
Part Two	Open Source Text
Part Three	Assignment Questions
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Table One Study Guide Contents

Part One

Business Data Communications and Networking
Selected Questions Chapters 1, 2, and 3.

Chapter One

Introduction to Data Communications

1. Define Local Area Network (LAN), metropolitan area network (MAN), wide area network (WAN), and backbone network (BN).
2. List the seven OSI network model layers.
3. List the five layers in the Internet network model.
4. Explain how Internet standards are developed.
5. Explain who develops Internet standards.
6. List important data communications standards-making bodies including the Internet Society, the IETF, IEEE, ANSI, and the ITU.

Chapter Two

Application Layer

1. Compare and contrast host and client-server networks.
2. What is middleware? Why is it important?
3. Define and explain n-tier client-server architecture.
4. How does a thin client differ from a thick client?
5. For what is HTTP/HTML used?

6. Explain how a Web browser, the Internet, and a Web server work together to send a page from a server to a user.
7. What is a virtual server?
8. What is cloud computing?

Chapter Three

Physical Layer

1. How does a multipoint circuit differ from a point-to-point circuit?
2. List and describe three types of guided media.
3. Compare and contrast analog and digital data.
4. Compare and contrast serial and parallel data transmission.
5. Define bandwidth.
6. Describe factors that affect transmission speed.
7. Why is data compression useful?
8. What data compression standard uses Lempel-Ziv encoding? Describe how it works.
9. What is the term used to describe the placing of two or more signals on a single circuit?
10.   Describe how DSL (digital subscriber line) works.
11.   What is the function of inverse multiplexing (IMUX)?
12.   What is VoIP?

Part Two

Computer Networking : Principles, Protocols and Practice.

Part 1: Introduction
   Introduction
   Services and protocols – not on exam
   The reference models
      The five layers reference model
      The TCP/IP reference model
      The OSI reference model

Part 2: The Application Layer
   The application Layer
   Principles
      The peer-to-peer model
   The application layer
   Application-level protocols
      The Domain Name System (Only most significant parts testable. For example, know what a hosts.txt file is…. Domain tree, nameserver, query, …)
         Electronic mail (Only selections from "From ASCII to Unicode)
            The Simple Mail Transfer Protocol (Section not on exam)

The Post Office Protocol (Section not on exam)
The HyperText Transfer Protocol (Section not on exam)

In many ways, your open source text covers material very similar to your hard cover text. One difference is that it covers DNS and HTTP in slightly more depth. It would be prudent to be familiar with both of those sections. In contrast, I wouldn't expect any questions from the "Services and Protocols" section. Nor would I expect specific questions from the Application Layer Sections that are marked "Section not on exam." Note, related material on the hard cover text is considered testable.

Part Two
Assignment Questions

Assignment OSI Model Questions
1.   For each OSI layer, list the organization that is responsible for that layer's standard(s).
2.   By layer, list the names given to the format that the packet data units (PDUs) use at that level.

Assignment Application Protocol
Questions One
1.   How does the Application level of the TCP/IP model map to the ISO/OSI model?
2.   The primary difference between FTP and TFTP is user authentication. What is meant by the term "user authentication?"
3.   When you surf the World Wide Web, what protocol are you using?
6.   If you are buying a product on Amazon or checking your bank balance online, what protocol should you be using?
7.   Who created SSL?
8.   What is TLS? Who created it?
9.   List common Voice over IP (VoIP) protocols.

Questions Two
1.   Compare and contrast routable with non-routable protocols.
2.   What hardware device would you use to connect separate networks?
3.   In TCP/IP, what physical device is given to the default gateway?
4.   What is the Domain Name System (DNS)?
5.   Briefly describe the process that DNS employs to resolve domain names.
6.   What is DHCP?
7.   Briefly describe the DHCP process.

Assignment Network Media

Questions One
1.   What is the TIA/EIA 568 Standard?
3.   What is the function of a patch panel?
4.   What is the difference between plenum and non-plenum cable?

Questions Two
1.   For signaling, what type of technology does fiber optics employ?
2.   Is fiber optic cable easy to tap?
3.   Describe a situation in which you would employ multimode fiber optic cable?
4.   What would be a conventional light source for multimode fiber optic cable?
5.   Describe a situation in which you would employ single mode fiber optic cabling?
6.   What would be a conventional light source for single mode fiber optic cabling?

Questions Three
1.   What type of cable do the terms 10base5, "Thicknet", RG-8, 10base2, and RG-58 describe?
2.   What type of cabling uses copper conductor pairs that are twisted?
3.   What differentiates UTP from STP?
4.   What is the most common form of Ethernet cabling for Local Area Networks?

Questions Four
1.   What is the EIA?
2.   What is the TIA?
3.   For what is Category 3 cable used?
4.   Compare and contrast Cat5 and Cat5e cable.
5.   In what situation would you want to employ Cat6 cable?

Questions Five
1.   What is an Ethernet straight through TWP copper cable? When would you use it?
3.   What is an Ethernet crossover cable? When would you use one?
4.   If you were going to connect two CSU/DSUs to each other, what type of cable would you use?

Questions Six
1.   Why wouldn't you want to use regular TWP cable in a ceiling plenum?

Questions Seven
1.   Why do you always need to provide power to the device when you convert from fiber to copper?
2.   Can a network signal from almost any type of media be converted to any other type of media?

Questions Eight
1.   What type of cable is used in a 10base5 network?
2.   How far can you run on a single run of 10baseT?
3.   How far can you run on a single run of 100baseTx?

Assignment RackSpace: Web Hosting, DNS
        During Week One of Rackspace's Intro to Web Hosting you covered several topics. Including:
            Web Hosting
            DNS
            Web Servers
            Load Balancing
            Shared, Dedicated, and Managed Hosting
        It would be prudent to be familiar with all of the quizzes that you took during Week One.

Part Three
Vocabulary

Chapter One
American National Standards Institute (ANSI)
backbone network (BN)
broadband
client
convergence
file server
Institute of Electrical and Electronics Engineers (IEEE)
ITU
Internet Engineering Task Force (IETF)
Internet model
Internet service provider (ISP)
internetwork layer
local area network (LAN)
local exchange carrier (LEC)
metropolitan area network (MAN)
net neutrality
Open Systems Reference model (OSI model)

peer-to-peer network
pervasive networking
protocol
Protocol Data Unit (PDU)
protocol stack
Request for Comment (RFC)
router
server
transport layer
Voice Over Internet Protocol (VOIP)
Web server
wide area network (WAN)

Chapter Two

client-server architecture
cloud computing
cluster
host-based architecture
Hypertext Markup Language (HTML)
Hypertext Transfer Protocol (HTTP)
Middleware
Multipurpose Internet Mail Extension (MIME)
n-tier architecture
peer-to-peer architecture
Post Office Protocol (POP)
scalability
Simple Mail Transfer Protocol (SMTP)
thick client
thin client
three-tier architecture
two-tier architecture
uniform resource locator (URL)
virtual server
World Wide Web
Web browser
Web server

Chapter Three

American Standard Code for Information Interchange (ASCII)
analog transmission
bandwidth
Interoperability

baud rate
carrier wave
channel
circuit
circuit configuration
coaxial cable
codec
coding scheme
customer premises equipment (CPE)
digital subscriber line (DSL)
digital transmission
fiber-optic cable
frequency
full-duplex transmission
half-duplex transmission
Hertz (Hz)
inverse multiplexing (IMUX)
local loop
logical circuit
microwave transmission
modem
multipoint circuit
multiplexing
parallel transmission
physical circuit
plain old telephone service (POTS)
radio transmission
satellite transmission
serial transmission
simplex transmission
switch
twisted pair cable (TWP)
unicode
Voice over Internet Protocol (VoIP)
wireless media