Possible Question: Data Communication and Networking (Chapter 1-5)

Chapter 1:

Short Notes/ Questions:

1. 3 (three) parts to understand network (Slide 7)
2. Worldwide Competitive Markets (Slide 12)
3. Net Neutrality (Page 10)
4. Telecommunication, Data Communication and Broadband Communication (Slide 16) (Page 27)
5. Intranet vs extranet (Page 15)
6. Multi-Layered Network (Slide 22)
7. Types of network standards (De-juro, De-facto) (Page 23)
8. 3 (Three) types of De-juro network standards.
9. Convergence (Page 27)
10. Pervasive Networking (Slide 47)

Broad Questions:

1. Types of Networks (Page 12, 13, 14)
2. 7 Layers of OSI model (Page 16,17,18)
3. 5 Layers of Internet Model (Page 18, 19)

Chapter 1:

Short Notes/ Questions:

1. Application Architecture (Page 40)
2. Functions of Application Architecture (Page 40)
3. Examples of clients and Servers (Slide 5)
4. Name of application architecture (Slide 6)
5. Advantages and Disadvantages of Host based architecture. (Class lecture)
6. Middleware (Page 44)
7. Name of Multi-tier architectures (Slide 14)

8. Multi-tier advantages, disadvantages (Slide 17)

9. Thick clients, thin clients (Page 46)

10. P2P Architecture definition and disadvantages and advantages (Page 46,47)

11. Criteria for choosing network architecture (Slide 21)

12. HTTP request message (Slide 26)

13. HTTP response message (Slide 28)

14. HTML, XML, POP, IMAP (Full form).

15. Two –tier email architecture (Slide 34)

16. Host-based email architecture (Slide 35)

17. MIME, Telnet, IM, Video Conferencing (3 types of video conferencing), webcasting (Slide 36, 39, 40, 42, 45, 46)

Broad Questions:

1. What is application architecture. Describe Host based, Client based, and Client server architecture (Page 41,42, 43)

2. Describe Multi-tier architecture with example (Page 44, 45,46)

Chapter 3:

Short Notes/ Questions:

1. Modem (Page 78)

2. Codec (Page 78)

3. Circuit Configuration def. + types (Page 79,80)

4. Data flow types (Page 81, 82)

5. Turnaround time / Retrain time (Page 81)

6. Multiplexing (Page 81)

7. Guardbands (Page 82)

8. IMUX (Page 85)

9. Types of communication media (Page 88)

10. Character, Coding Scheme, Bytes (Page 95, 96)

11. Types of transmission modes (Page 97)

12. Types of digital transmission (Page 98)

13. Machester encoding (Page 100)

14. POTS, Analog transmission (Page 100)

Broad Questions:

1. 5 key benefits of digital transmission. (Page 79)

2. What is multiplexing. Describe the types of multiplexing. (Page 81-85)

3. What are the two communication media? Describe all the types of each communication media. (Page 88-93)

4. Describe the reasons for choosing a communication media (Page 94,95)

5. Describe Transmission modes and digital transmission (Page 97,98)

Chapter 4:

Short Notes/ Questions:

1. LLC (Logical Link Control), MAC (Media access control sublayer) (Page 120)

2. Contention (Page 121)

3.Controlled access and the types of controlled access (Page 121)

4. Polling and the types of polling (Page 122)

5. Burst Error (Page 123)

6. Types of Error prevention (Page 125)

7. Forward error correction (Page 130)

8. Synchronous transmission, asynchronous transmission (Page 132,133)

9. High-level data link control (HDLC) (Page 134)

10. Ethernet (Page 134)

11. Transmission efficiency (Page 137)

12. Throughput (Page 137)

Broad Questions:

1. Describe relative performance with example and diagram. (Page 122, 123 and follow lecture notes)

2. Describe the types of sources of errors (Page 123, 124)

3. What is error detection? Describe 3 (three) types of error detection with example. Provide the formula of cyclical redundancy check as well (Page 126,127).

4. Describe error correction via retransmission with figure (Page 128,129)

5. TRIB (Transmission rate of information bits) Math:

$$TRIB = \frac{Number\ of\ information\ bits\ accepted}{Total\ time\ required\ to\ get\ the\ bits\ accepted}$$

$$TRIB = \frac{K(M-C)(1-P)}{\left(\frac{M}{R}\right)+T}$$

Here,

M = Frame length

R= Data transmission rate

C = Average number of non-information

P = Probability of retransmission

T = Time between frames in seconds.

Chapter 5:

Short Notes/ Questions:

1. User Datagram Protocol (UDP) (Page 151)

2. Port Address, Types of port address (Page 153)

3. Session (Page 155)

4. Quality of Service (QOS) (Page 156)

5. ICANN (Page 159)

6. Types of addressing (Page 157)

7. Classless addressing (Page 159)

8. Subnet Mask (Page 161)

9. Dynamic addressing (Page 161)

10. DHCP (Dynamic Host Control Protocol) (Page 161)

11. Address resolution (Page 162)

12. Domain Name Service (DNS) (Page 163)

13. Broadcast message (Page 164)

14. Routing (Page 165)

15. Access control list (ACL) (Page 173)

16. IGMP (Internet group management protocol) (Page 172)

Broad Questions:

1. What is routing? Write down 3 (three) types of routing. (165,167,168)

2. Describe the routing protocols in short (Follow class lecture, page 168-171)

3. Describe Unicast, broadcast and multicast message (Follow class lecture, Page 171,172)

4. What is a router? Describe 3 (three) functions of router, and also 3 (three) ways network manager can connect and configure and maintain a router (Follow class lecture) (Page 172,173,174)

5. Mention 4 (four) pieces of networking layer addressing and routing information before it can operate (Page 174)