COMPUTER NETWORKS : [2140709]

B.E. SEMESTER 4

Question Bank

Unit. 1 INRTODUCTION TO COMPUTER NETWORKS AND INTERNET

1. Explain Advantages and Usage of Computer Network.
2. Explain the Term Internet in details.
3. Discuss different types of Guided and Unguided media used to transmit data in network.
4. Explain multimode fiber and single mode fiber. Explain the transmission of light through fiber.
5. Which of the OSI layer handles each of the following:
    - Determine which route through the subnet to use.
    - Dividing the transmitted bit stream into frames.
    - Encryption and Compression of the information.
    - Flow control between source and destination node
6. Explain OSI reference model with diagram.
7. List difference between OSI and TCP/IP model.
8. Explain Switching mechanisms in Computer Network.
9. What is mean by Network Topology? Explain different topologies with diagram.
10. Explain the following terms with respect to computer networks
    I. Delay
    II. Throughput
    III. Performance
    IV. Jitter

Unit.2 APPLICATION LAYER

11. Give architectural overview of WWW.
12. Describe the built in HTTP request methods.
13. Explain the basic functions of the e-mail system.
14. Explain DNS in detail with example and its advantages.
15.

```
GET /cs453/index.html HTTP/1.1<cr><lf>Host: gai
a.cs.umass.edu<cr><lf>User-Agent: Mozilla/5.0 (
Windows;U; Windows NT 5.1; en-US; rv:1.7.2) Gec
ko/20040804 Netscape/7.2 (ax) <cr><lf>Accept:ex
t/xml, application/xml, application/xhtml+xml, text
/html;q=0.9, text/plain;q=0.8,image/png,*/*;q=0.5
<cr><lf>Accept-Language: en-us,en;q=0.5<cr><lf>Accept-
Encoding: zip,deflate<cr><lf>Accept-Charset: ISO
-8859-1,utf-8;q=0.7,*;q=0.7<cr><lf>Keep-Alive: 300<cr>
<lf>Connection:keep-alive<cr><lf><cr><lf>
```

1) Does browser request a non-persistent or a persistent connection?
2) Which is the (complete) URL of the document requested by the user?
3) Which HTML method is used to retrieve the requested URL?

16. Why distributed database design is more preferred over centralized esign to implement DNS in the Internet? Justify. Also explain the way of DNS servers to handle the recursive DNS query using suitable diagram.
17. Explain the working of electronic mail protocols SMTP, IMAP and POP3 in brief with suitable diagram.
18.What is HTTP? Differentiate its persistent and non-persistent types with request-response behavior of HTTP.
19.Explain the concept of Cookies and its components with suitable example.
20.Explain the high-level view of Internet e-mail system and its major components

Unit 3. TRANSPORT LAYER

Explain the basic five service primitives of the transport layer protocol.
(LISTEN, CONNECT, SEND, RECEIVE, DISCONNECT)

1. Write about flow control and buffering mechanism in transport protocols.
2. Explain the working principle of UDP.
3. Explain the working principle of TCP.
4. Explain a protocol using Go Back N strategy using the pipelining and show the scenario in case of :
5. When the receiver window's size is 1(one) and
6. When the receiver window size is large.
7. Explain TCP Header Fields with TCP Header format diagram.
8. Compare and differentiate TCP and UDP.
9. Explain how congestion control is achieved in TCP?
10. Discuss transport layer multiplexing and Demultiplexing concept.

11.What is the main difference between forwarding and routing? Explain at least two , . forwarding techniques used by the router to switching to packets from input port to output port of the router

12.Explain Connectionless Transport protocol UDP with popular Internet applications.
13.Explain rdt2.0 with FSM diagram

14. What do you mean by congestion and overflow? Explain the slow-start component of the TCP congestion-control algorithm.

15.Explain the TCP Segment structure and justify the importance of its field values
16.How many packets overhead while doing the data communication using TCP? Draw the TCP connection establishment and termination process with diagram.
17. Suppose a process in Host C has a UDP socket with port number 6789. Suppose both ? Host A and Host B each send a UDP segment to Host C with destination port number 6789. Will both of these segments be directed to the same socket at Host C? If so, how will the process at Host C know that these two segments originated from two different hosts

Unit 4. Network Layer

1. **Explain the Network layer functions with examples**
2. **Explain the differences between Virtual Circuits and Datagram Networks in detail**
3. **Explain the significance of " Longest Prefix Matching Rule" .**
4. **Explain the Router Architecture in detail.**
5. **Explain the different types of Switching Fabrics in details.**
6. **Define Head of Blocking. Explain it in Input port Queuing.**
7. **Explain IPv4 datagram format / packet format.**
8. **Explain in Brief IP Fragmentations & Re-assembly**
9. **Define a) Subnet b) Subnet Mask c) IP address d) CIDR e) ICANN f) Private IP address g) Public IP address**
10. **Explain Classful and Classless Addressing with example**
11. **Explain DHCP client -server scenario with example**
12. **Explain Network Address Translation Problems in brief**

13. All the Examples , which are given in exercise and covered in Lectures..