APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code : CS-1EB-18-1   (Pages: 5)

Name:............................

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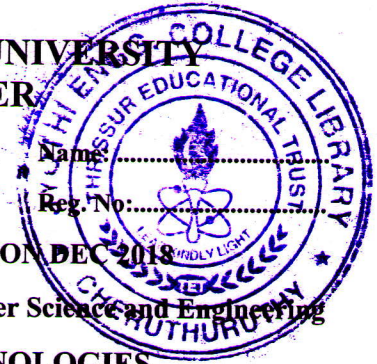
FIRST SEMESTER M.TECH. DEGREE EXAMINATION DEC 2018

Branch: Computer Science and Engineering   Specialization: Computer Science and Engineering

08 CS 6051(B) ADVANCED NETWORK TECHNOLOGIES

Time:3 hours   Max.marks: 60

Answer all six questions.

Modules 1 to 6:Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	Module 1	Marks
1.a	Consider an HTTP client that wants to retrieve a Web document at a given URL. The IP address of the HTTP server is initially unknown. What transport and application-layer protocols besides HTTP are needed in this scenario?	3

Answer b or c

b	i)From a user's perspective, what is the difference between the download-and-delete mode and the download-and-keep mode in POP3?	6

ii)Consider accessing your e-mail with POP3.Suppose you have configured your POP mail client to operate in the download-and-delete mode. Complete the following transaction:

```
C: list
S: 1 498
S: 2 912
S: .
C: retr 1
S: blah blah ...
S: ..........blah
S: .
?
?
```

c Classify each of the scenarios below as client-server, P2P, or hybrid, and explain your answer briefly. **6**

  i) Amazon ii) Skype iii) BitTorrent iv) Telnet v) DNS vi) Whatsapp

Q.no.	Module 2	Marks

2.a Suppose a process in host C has a UDP socket with port number 787. Suppose host A and host B each send a UDP segment to host C with destination port number 787. 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 segments originated from two different hosts? **3**

<div align="center">Answer b or c</div>

b Consider sending a large file from one host to another over a TCP connection that has no loss. **6**

  i) Suppose TCP uses AIMD for its congestion control without slow start. Assuming CongWin increases by 1 MSS every time an ACK is received and assuming approximately constant round-trip times, how long does it take for CongWin to increase from 1 MSS to 5 MSS (assuming no loss events and constant RTT)?

  ii) What is the average throughput (in terms of MSS and RTT) for this connection up through time # 4 RTT?

c Host A and B are communicating over a TCP connection, and Host B has already received from A all bytes up through byte 144. Suppose that Host A then sends two segments to Host B back-to-back. The first and second segments contain 20 and 40 bytes of data, respectively. In the first segment, the sequence number is 145, source port number is 303, and the destination port number is 80. Host B sends an acknowledgement whenever it receives a segment from Host A. **6**

  i) In the second segment sent from Host A to B, what are the sequence number, source port number, and destination port number?

  ii) If the first segment arrives before the second segment, in the acknowledgement of the first arriving segment, what is the acknowledgment number, the source port number, and the destination port number?

  iii) If the second segment arrives before the first segment, in the acknowledgement of the first arriving segment, what is the acknowledgment number?

  iv) Suppose the two segments sent by A arrive in order at B. The first acknowledgement is lost and the second segment arrives after the first timeout interval. Draw a timing diagram, showing all other segments and acknowledgements sent.
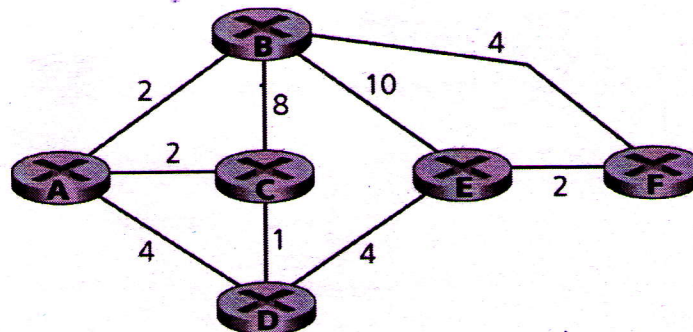
Q.no.	Module 3	Marks

3.a What is the difference between routing and forwarding?   **3**

<div align="center">Answer b or c</div>

b Compare & contrast link state and distance vector routing algorithm?   **6**

c Consider the network shown below. Show the operation of Dijkstra's (link-state)   **6**
algorithm for computing the least cost path from E to all destinations. What is
the shortest path from E to B, and what is the cost of this path?

Q.no.	Module 4	Marks

4.a Define and give examples of distributed Computing systems.   **3**
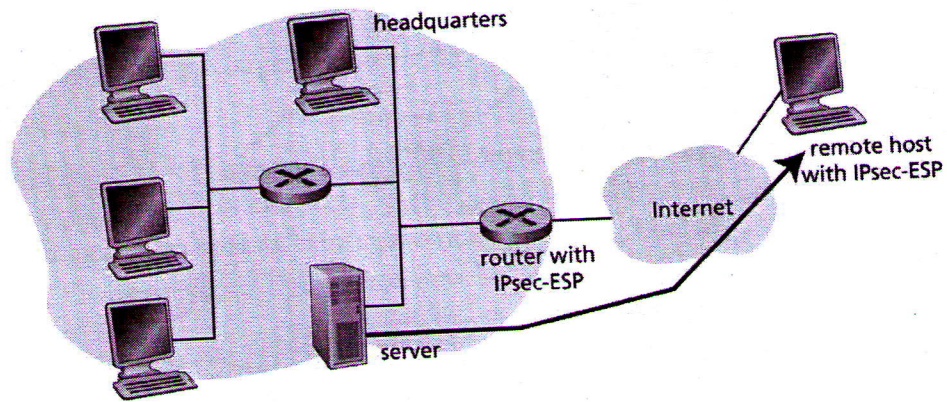
<div align="center">Answer b or c</div>

b What are the two types of loss anticipation schemes used in VoIP?   **6**

c Consider the network below. Suppose that the remote host and server 6
communicate with the ESP protocol in tunnel mode.

i) An IP datagram emitted by the server and destined to the remote host will have
whose IP address for the source address and whose IP address for the destination
address?

ii) When this datagram arrives at the router, the router may or may not transform
it into another IP datagram. The IP datagram sent by the router will have whose
IP address for the source address and whose IP address for the destination
address?

Q.no.	Module 5	Marks
5.a	List down the benefits of storage area networks	4
	Answer b or c	
b	Discuss in detail about different SAN topologies.	8
c	Explain in detail about SNMP.	8

Q.no.	Module 6	Marks
6.a	Write down the subnet, broadcast address and valid host range for the IP address 172.16.10.5/ 25	4
	Answer b or c	
b	You have been given the following info : IP: 192.168.3.146 Netmask: 255.255.248.0 Gateway: 192.168.1.100 DNS: 8.8.4.4 and your NIC is named eth0 on you Linux. List down the steps to temporarily connect the Linux machine to the Internet from the terminal	8

c Consider the following string of ASCII characters that were captured by Wireshark when **8** the browser sent an HTTP GET message (this is the ctual content of an HTTP GET message). The characters <cr><lf> are carriage return and line feed characters (that is, the italicized character string <cr> in the text below represents the single carriage-return character that was contained at that point in the HTTP header). Answer the following questions, indicating where in the HTTP GET message below you find the answers.

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

i) What is the URL of the document requested by the browser? Make sure you give the hostname and the file name parts of the URL.

ii) What version of HTTP is the browser running?

iii) Is a Netscape or an Internet Explorer browser making the request?

iv) Is the browser requesting a non-persistent or a persistent connection?

v) What is the IP address of the computer on which the browser is running?

vi)What do the strings "application/*" and "*/*" signify in the Accept: header?