

Propagation delay =  $d/s = (3000 / 1.8 \times 10^8) = 16.6 \text{ usec}$

**Question #5:**

Calculate the LAN and Access link utilization in following scenario shown in figure#1.

- a. Average object size is 400 Kilo Bytes.
- b. Average request rate from the browsers to origin server is 30 requests/seconds.
- c. Cache Hit ratio is 0.5

**Answer:**

Average Requests/Sec = 30

Avg Size =  $400 \text{ KB} * 8 = 3200 \text{ Kbits} = 3.2 \text{ Mbits}$

Total load =  $(3.2 * 30) = 96 \text{ Mbits/sec}$

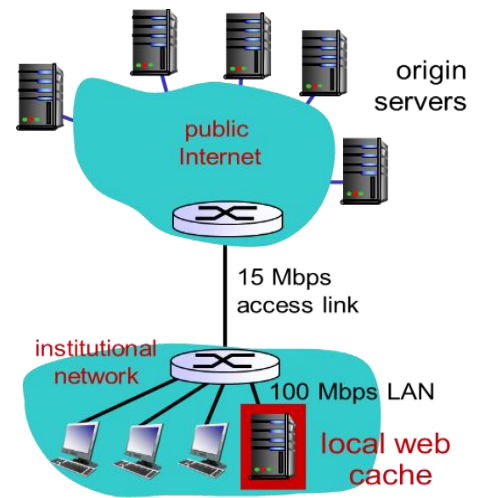
LAN Utilization = 96 %

Data rate to browsers over access link =  $(0.5 * 96) = 48 \text{ Mbits}$

Cache hit ratio = 0.5 which would put load of 48 Mbits/sec to access link

Access link utilization =  $48/15 = 3.2$

So it will be 320% utilized and packets will drop due to queuing.



- How many bits internet address is assigned to each host on a TCP/IP internet which is used in all communications with the host?  
a) 16 bits                      **b) 32 bits**                      c) 48 bits                      d) 64 bits
- Which of the following is required to communicate between two computers?  
a) Communications software                      b) protocol                      c) communications hardware                      **d) All of the above**
- The packet of information at the application layer is called:  
a) Packet                      **b) Message**                      c) Segment                      d) Frame
- Logical addressing is found in the \_\_\_\_\_ layer, while physical addressing is found in the \_\_\_\_\_ layer.  
a) Physical, Network                      b) Network, Physical                      c) Data Link, Network                      **d) Network, Data Link**
- The OSI Reference Model layers, in order from top to bottom, are:  
a) Application, Physical, Session, Transport, Network, Data Link, Presentation  
b) Application, Presentation, Network, Session, Transport, Data Link, Physical  
c) Physical, Data Link, Network, Transport, Session, Presentation, Application  
**d) Application, Presentation, Session, Transport, Network, Data Link, Physical**
- Which OSI layer is concerned with reliable end-to-end delivery of data?  
a) Application                      **b) Transport**                      c) Network                      d) Data Link
- Which transport layer protocol provides low overhead and would be used for applications which do not require reliable data delivery?  
a) TCP                      b) IP                      **c) UDP**                      d) HTTP
- The real Time streaming is an example of:  
**a) A UDP application**                      b) A TCP application                      c) Both of these                      d) None of these
- The DNS Record type which is used for Mail Servers records is:  
a) NS Record                      b) MS Record                      c) Mail Record                      **d) MX Record**
- Transport layer aggregates data from different applications into a single stream before passing it to  
**a) network layer**                      b) data link layer                      c) application layer                      d) physical layer
- Which one of the following is a transport layer protocol used in networking?  
a) TCP                      b) UDP                      **c) Both TCP and UDP**                      d) None of the mentioned
- An endpoint of an inter-process communication flow across a computer network is called  
**a) socket**                      b) pipe                      c) port                      d) none of the mentioned
- A \_\_\_\_\_ is a TCP name for a transport service access point.  
**a) port**                      b) pipe                      c) node                      d) none of the mentioned

14. User datagram protocol is called connectionless because  
 a) all UDP packets are treated independently by transport layer  
 b) it sends data as a stream of related packets  
 c) it is received in the same order as sent order  
 d) none of the mentioned
15. Transport layer protocols deals with  
 a) application to application communication  
 b) process to process communication  
 c) node to node communication  
 d) none of the mentioned
16. Your company has a LAN in its downtown office and has now set up a LAN in the manufacturing plant in the suburbs. To enable everyone to share data and resources between the two LANs, what type of device(s) are needed to connect them? Choose the most correct answer.  
 a) Modem  
 b) Cable  
 c) Hub  
 d) Router
17. The term 'duplex' refers to the ability of the data receiving stations to echo back a confirming message to the sender. In full duplex data transmission, both the sender and the receiver.  
 a) cannot talk at once  
 b) can receive and send data simultaneously  
 c) can send or receive data one at a time  
 d) can do one way data transmission only
18. When you ping the loopback address, a packet is sent where?  
 a) On the network  
 b) Down through the layers of the IP architecture and then up the layers again  
 c) Across the wire  
 d) through the loopback dongle
19. Which of the following TCP/IP protocol is used for transferring electronic mail messages from one machine to another?  
 a) FTP  
 b) SNMP  
 c) SMTP  
 d) RPC
20. A distributed network configuration in which all data/information pass through a central computer is  
 a) bus network  
 b) star network  
 c) ring network  
 d) Point-to-point network
21. Retransmission of packets must be done when  
 a) Packet is lost  
 b) Packet is corrupted  
 c) Packet is needed  
 d) All of the mentioned
22. TCP process may not write and read data at the same speed. So we need \_\_\_\_\_ for storage.  
 a) Packets  
 b) Buffers  
 c) Segments  
 d) Stacks
23. TCP groups a number of bytes together into a packet called  
 a) Packet  
 b) Buffer  
 c) Segment  
 d) Stack
24. Communication offered by TCP is  
 a) Full-duplex  
 b) Half-duplex  
 c) Semi-duplex  
 d) Byte by byte
25. Which of the following is false with respect to UDP?  
 a) Connection-oriented  
 b) Unreliable  
 c) Transport layer protocol  
 d) All of the mentioned

**BEST OF LUCK!**