MIDTERM EXAMINATION #1
NETWORKING CONCEPTS 03-60-367-01
UNIVERSITY OF WINDSOR - School of Computer Science
Intersession 2009

Question Paper

NOTE: Students may take this question paper with them after the examination.

PLEASE READ CAREFULLY BEFORE YOU START

1. This is a CLOSED book test; no notes, textbooks, calculators or computer aids are allowed.
2. PRINT your name legibly and clearly with your Student ID in the space on the Scantron sheet. Use an HB pencil and carefully and thoroughly fill in the circle corresponding to the answer selection for each question.
3. You will be asked to sign your name once before leaving the exam room (sign-out).
4. PLACE ANSWERS on the Scantron sheet provided.
5. If you need more space for rough work you may use any additional space on the examination.
6. You are not allowed to give or receive unauthorized help with your test. Any misconduct, as outlined by the Senate bylaw 31 article I, will be reported accordingly.
7. You have 65 minutes to complete this test.
8. Copies of the original Midterm examination answer sheets will be returned to students.
9. **This examination has a maximum of 54 marks.**

Good Luck!

All questions are either Multiple Choice or True-False. For each Multiple Choice question, you are to choose <u>only one</u> response which best answers the question. For True-False questions you may <u>only</u> choose one option (True <u>or</u> False).

If an error is made on the Scantron sheet you must carefully erase the error and then carefully and completely indicate your intended choice of answer.

NOTATION: The following symbols are used in the examination.

MB – megabyte (1024 KB)	**KB – kilobyte (1024 B)**
B - 1 byte (8 b)	**b – bit**
m – metre	**km – kilometer (1000 m)**
Mbps – megabits per second	**kbps – kilobits per second (1024 b)**
km/s – kilometers per second	**msec – millisecond (1/1000 second)**

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1.   In the Client-Server approach, clients communicate directly with each other.
      A) True
      B) False

2.   TCP and UDP are sometimes called connection oriented protocols.
      A) True
      B) False

3.   HTTP is called a stateless protocol.
      A) True
      B) False

4.   A user requests a Web page that consists of some text and two JPEG images. For this
      page, the client will send one request message and receive three response messages.
      A) True
      B) False

5.   Two distinct document references (for example, cs.uwindsor.ca/60-367/index.html and
      cs.uwindsor.ca/60-367/image01.jpeg) can be sent over the same persistent connection.
      A) True
      B) False

6.   In the Client-Server approach, clients may have dynamic IP addresses.
      A) True
      B) False

7.   With non-persistent connections between browser and origin server, it is possible for a
      single TCP segment to carry two distinct HTTP request messages.
      A) True
      B) False

8.   The **DATE:** header in the HTTP response message indicates when the object the
      response was last modified.
      A) True
      B) False

9. 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 application layer protocols are needed in this scenario?
   A) DNS and HTTP
   B) TCP for DNS; TCP for HTTP
   C) UDP for DNS; TCP for HTTP
   D) None of the above are correct responses.

10. 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 layer protocols besides HTTP are needed in this scenario?
    A) DNS and HTML
    B) TCP for DNS; TCP for HTTP
    C) UDP for DNS; TCP for HTTP
    D) All of the above are correct responses.

11. Cookies maintain state at sender/receiver over multiple transactions by _____ .
    A) Maintaining open connections
    B) Providing protocol endpoints
    C) Utilizing the OSI Session Layer
    D) Placing data in JAR files

12. Which of the following is not a proper layer of the TCP stack?
    A) Application
    B) Network
    C) Session
    D) Link

13. HTTP is referred to as a stateless protocol because _____ .
    A) clients do not maintain historic information about transactions with servers
    B) servers and clients do not maintain open connections
    C) server maintains no information about past client requests
    D) All of the above responses are correct

14. Cookies may be used to maintain user-server state.
    A) True
    B) False

15. Store and Forward refers to storing a complete message on each router before forwarding it to the next router on the way to the receiver.
    A) True
    B) False

16. Congestion is the primary cause of _____ .
    A) processing delay
    B) queuing delay
    C) transmission delay
    D) propagation delay

17. UDP is a reliable protocol.
    A) True
    B) False

18. TCP is a reliable protocol.
    A) True
    B) False

19. Most local area networks use electrostatic network hardware.
    A) True
    B) False

20. A network's speed is expressed in terms of _____ .
    A) Routing protocol
    B) Round trip time
    C) Bit rate and latency
    D) I/O buffer response

21. Photonic networks utilize _____ switches.
    A) LAN
    B) IP
    C) CBR
    D) ATM

22. TCP abstracts data communication to appear as an apparent stream of flowing data.
    A) True
    B) False

23. Both UDP and TCP require that the applications recognize their own data formats.
    A) True
    B) False

24. Which of the following is not a proper layer of the OSI stack?
    A) Propagation
    B) Network
    C) Session
    D) Link

25. Applications require which of the following transport services.
    A) Data loss and Security
    B) Timing
    C) Throughput
    D) All of the above responses are correct

26. Modern networks support networking sharing using techniques such as _____ .
    A) Time division multiplexing
    B) Frequency division multiplexing
    C) Packet switching
    D) All of the above responses are correct

27. Using TCP, two messages are exchanged before a connection exists.
    A) True
    B) False

28. Multiple TCP streams can distinguished on a given machine using _____ .
    A) Ports
    B) IP addresses
    C) network interface cards
    D) All of the above responses are correct.

29. A machine (and even a single program) may have several open sockets at any time.
    A) True
    B) False

30.   HTTP is called a _____ protocol, SMTP is called a _____ protocol.
      A) Pull (HTTP) / Pull (SMTP)
      B) Push (HTTP) / Pull (SMTP)
      C) Push (HTTP) / Push (SMTP)
      D) Pull (HTTP) / Push (SMTP)

31.   MIME protocol refers to _____ .
      A) micromedia email extension
      B) movement for internet multimedia email
      C) multimedia mail extension
      D) None of these responses are correct.

32.   Domain Name System (DNS) is a transport-layer protocol where host, routers and name
      servers communicate to resolve names (that is, provide address/name translation).
      A) True
      B) False

33.   Consider a packet of length 1024 <u>bytes</u>. Assuming the packet must travel over a link of
      distance 2500 kilometers with propagation speed 2.5×10^8 m/s and transmission rate 2
      Mbps, what is the propagation delay?
      A) 21 msec
      B) 10 msec
      C) 1 msec
      D) 10 microsec

34.   Suppose Host A wants to send a large file to Host B. The path from Host A to Host B
      has three links, of rates R1 = 500 kbps, R2 = 2 Mbps and R3 = 1 Mbps. Assuming no
      other traffic in the network, what is the throughput for the file transfer?
      A) 500 kbps
      B) 2 Mbps
      C) 1 Mbps
      D) 3.5 Mbps

35.   The type of domain that deals with *edu, com, net, org,* and other similar extensions, is
      called a _____ .
      A) Root DNS servers
      B) Top-level DNS servers
      C) Authoritative DNS servers
      D) Local DNS servers

36. FTP makes use of _____ connections.
    A) UDP for data and UDP for control
    B) TCP for data and UDP for control
    C) TCP for data and TCP for control
    D) None of these responses are correct

37. The socket that represents a 'passive open' is a(n) _____ socket.
    A) Client
    B) Server
    C) TCP
    D) Application

38. All datagrams contain 2 ports.
    A) True
    B) False

39. Message encapsulation refers to _____ .
    A) designating message contents with descriptive data
    B) embedding message payloads and protocol headers within logically layered
       packages
    C) reliance upon IP for transmitting messages
    D) allowing for message content verification

40. UDP and TCP are examples of _____ layer protocols.
    A) Application
    B) Presentation
    C) Transport
    D) Network

41. Transport services and protocols _____ .
    A) provide logical communication between app processes running on different hosts
    B) are provided in end systems
    C) make more than one transport protocol available to applications
    D) All of the above responses are correct

42. In order to deal with the situation where, too many sources send too much data too fast for a network to handle, it is necessary to use a technique called _____ .
    A) Flow control
    B) Congestion control
    C) Routing control
    D) Dynamic packet management

43. Routers provide feedback to end systems to assist _____ .
    A) Network-assisted congestion control
    B) Network-assisted flow control
    C) End-end congestion control
    D) End-end flow control

44. TCP is not suitable for supporting circuit switched connections because _____ .
    A) it does not maintain persistent connections
    B) it does not support quality of service
    C) routers used for TCP packet processing must acknowledge receipt of every packet
    D) All of the above responses is correct

45. By using Web caching _____ .
    A) it is possible to reduce response time for client request
    B) it is possible to reduce traffic on an institution's access link
    C) the cache acts as both client and server
    D) All of the above responses is correct

46. Delivery and storage of email messages to a server is achieved using _____ .
    A) Post Office Protocol (POP)
    B) Internet Mail Access Protocol (IMAP)
    C) Simple Mail Transfer Protocol (SMTP)
    D) Hypertext Transfer Protocol (HTTP)

47. Pure Peer-to-Peer systems do not use "always on" servers.
    A) True
    B) False

48. Peer-to-Peer networks are used _____ .
    A) for content sharing
    B) for Instant Messaging
    C) for IP based telephony
    D) All of the above responses are correct.

49. Suppose Host A wants to send a large file of size 4 MB to Host B. The path from Host A to Host B has three links, of rates R1 = 500 kbps, R2 = 2 Mbps and R3 = 1 Mbps. Roughly, how long will it take to transmit the file to Host B?
    A) 6.4 seconds
    B) 10.7 seconds
    C) 32 seconds
    D) 64 seconds

50. A Denial-of-Service attack can be performed by bombarding a server with connection requests.
    A) True
    B) False

51. Trojan Horses may be embedded in web page plugins.
    A) True
    B) False

52. Sending packets with false source address is called _____ .
    A) Packet sniffing
    B) IP spoofing
    C) Record and Playback
    D) Worms

53. A stream is a sequence of packets that flow into or out of a process.
    A) True
    B) False

54. UDP provides unreliable transfer of datagrams between client and server.
    A) True
    B) False