National University of Computer and Emerging Sciences

School of Computing **Spring 2017** **Islamabad Campus**

CS-307 Computer Networks

Serial No:

Sessional I

Total Time: 1 Hour

Total Marks: 55

Tuesday, February 21, 2017

Course Instructor

Dr. Muhammad Asim

_____

Signature of Invigilator

Student Name	Roll No	Section	Signature

DO NOT OPEN THE QUESTION BOOK OR START UNTIL INSTRUCTED.

Instructions:

1. Attempt on question paper. Attempt all of them. Read the question carefully, understand the question, and then attempt it.
2. No additional sheet will be provided for rough work.
3. After asked to commence the exam, please verify that you have **Nine (9)** different printed pages including this title page. There are total of **FOUR (4)** questions.
4. Use permanent ink pens only. Any part done using soft pencil will not be marked and cannot be claimed for rechecking.

	Q-1	Q-2	Q-3	Q-4	**Total**
Marks Obtained					
Total Marks	30	5	10	10	**55**

Vetted By: _____ **Vetter Signature:** _____

Question 1: MCQs – [30x1 = 30 Points]

Please cross (X) the correct answer, any answer not provided in the table below would not be considered. Cutting, over writing, multiple answers would be considered as incorrect.

There is no negative marking.

Sr. No	A	B	C	D	E	Sr. No	A	B	C	D	E
01						16					
02						17					
03						18					
04						19					
05						20					
06						21					
07						22					
08						23					
09						24					
10						25					
11						26					
12						27					
13						28					
14						29					
15						30					

1. Which of following provides reliable communication:
    a) TCP
    b) UDP
    a) IP + UDP – by installing reliability plugin
    b) All of the above

2. Session and Presentation layers are missing in Internet Protocol Stack, when compared to OSI model. It means that, when using Internet Protocol Stack:
    a. We can never have the features provided by these layers
    b. We can always switch to OSI model when any such service is needed
    c. There is no such thing as OSI model
    d. The feature of these layers are already implemented at the Application layer
    e. None of the above

3. Digital Subscriber Line (DSL) makes use of the cable television company's existing cable television infrastructure.
    a) True
    b) False

4. Router operates in which layer of the OSI Reference Model?
    a) Physical Layer
    b) Application Layer
    c) Transport Layer
    d) Network Layer

5. When you type http://slate.nu.edu.pk/ what would be the first application level protocol (amongst the ones we studied) that would be used to handle your request for fetching the SLATE page?
    a) DHCP
    b) HTTP
    c) DNS
    d) DSN

6. Which one of the following is/are service(s) Not provided by transport layer:
    a) Bandwidth Guarantee
    b) Timing
    c) Error correction
    d) All of the above

7. The range of well-known port numbers is:
    a) 0 to 65535
    b) 0 to 1024
    c) 0 to 1023
    d) 1024 to 65535

8. The time required for a bit to propagate from the beginning of the link to router B is the Transmission delay.
    a) True
    b) False

9. In what type of DNS record, a name field is a domain (you looking for) and value is the hostname of an authoritative DNS server
    a) MX
    b) A
    c) CNAME
    d) NS

10. Which of the following delay is faced by the packet in travelling from one end system to another:
    a) Propagation delay
    b) Queuing delay
    c) Transmission delay
    d) All of the above

11. The time required to examine the packet's header and determine where to direct the packet is part of
    a) Processing delay
    b) Queuing delay
    c) Transmission delay
    d) All of the above

12. Difference between IP and MAC addresses is that
    a) IP addresses are for the windows/linux machines; for apple machines we user MAC addresses
    b) IP addresses are used at the link layer for end-to-end routing and MAC addresses are used at the network layer for routing with network
    c) There is no such thing as MAC addresses, it is an OS provided by Apple
    d) All of the above
    e) None of the above

13. Internet mail places each object in
    a) Separate messages for each object
    b) One message
    c) Varies with number of objects
    d) None of the above

14. Application layer protocol defines
    a) types of messages exchanged
    b) message format, syntax and semantics
    c) rules for when and how processes send and respond to messages
    d) all of the above

15. In the transfer of file between server and client, if the transmission rates along the path is 10Mbps, 20Mbps, 30Mbps, 40Mbps. The throughput is usually
    a) 20Mbps
    b) 10Mbps
    c) 40Mbps
    d) 50Mbps

16. The resources needed for communication between end systems are reserved for the duration of session between end systems in
    a) Packet switching
    b) Circuit switching
    c) Line switching
    d) Frequency switching

17. The packet of information at the application layer is called
    a) Packet
    b) Data
    c) Segment
    d) Frame

18. To deliver a message to the correct application program running on a host, the following address must be consulted
    a) IP
    b) MAC
    c) Port
    d) None of the mentioned

19. The number of objects in a Web page which consists of 4 jpeg images and HTML text is
    a) 4
    b) 1
    c) 5
    d) None of the mentioned

20. The default connection type used by HTTP is
    a) Persistent
    b) Non-persistent
    c) Closed
    d) None of the above

21. DNS caching reduces the time to resolve an IP address but not reduces DNS traffic on the Internet.
    a) True
    b) False

22. The values GET, POST, HEAD are specified in one of the following line of a HTTP message
    a) Request line
    b) Header line
    c) Status line
    d) Entity body

23. The HTTP response message leaves out the requested object when the following method is used
    a) GET
    b) POST
    c) HEAD
    d) PUT

24. Multiple object can be sent over a TCP connection between client and server in
    a) persistent HTTP
    b) non-persistent HTTP
    c) both (a) and (b)
    d) none of the above

25. In the process of fetching an object from a server the HTTP request/response takes one of the following RTTs (non-persistent).
    a) 2
    b) 1
    c) 4
    d) 3

26. Which of the following functionality is not responsibility of DNS
    a) Hostname to IP address translation
    b) Load Distribution
    c) Network Maintenance
    d) Host Aliasing

27. Eavesdropping means:
    a) Spoofing source address in packet
    b) Prevent service from being used by others
    c) Intercepting or monitoring messages
    d) All of the above
    e) None of the above

28. Client Server Architecture a server:
    a) is always ON and have Dynamic IP
    b) is not always ON and have Dynamic IP
    c) is always ON and have Well know IP
    d) is not always ON and have Well Known IP
    e) None of the above

29. Web Cache increases the utilization of an organization Link
    e) True
    f) False

30. What DNS record is used to map a hostname to another hostname?
    g) Type A record – A probably stands for Alias
    h) TYPE TXT record
    i) Type NS record
    j) None of the above

Question 2: [1+1+1+1+1=5 Points]

Consider the following string of ASCII characters that were captured by Wireshark when the browser sent an HTTP GET message (i.e., this is the actual content of an HTTP GET message). Answer the following questions, indicating where in the HTTP GET message below you find the answer.

```
GET /index.html HTTP/1.1\r\n
Host: www-net.cs.umass.edu\r\n
User-Agent: Firefox/3.6.10\r\n
Accept: text/html,application/xhtml+xml\r\n
Accept-Language: en-us,en;q=0.5\r\n
Accept-Encoding: gzip,deflate\r\n
Accept-Charset: ISO-8859-1,utf-8;q=0.7\r\n
Keep-Alive: 115\r\n
Connection: keep-alive\r\n
\r\n
```

a) What is the URL of the document requested by the browser?

b) What version of HTTP is the browser running?

c) Does the browser request a non-persistent or a persistent connection?

d) What language is indicated in the request header?

e) What type of browser initiates this message? Why is the browser type needed in an HTTP request message?

Question 3: [2+4+4= 10 Points]

Suppose Host A wants to send a large file to Host B. The path from Host A to Host B has 3 links, of rates R1 = 500 kbps, R2 = 2 Mbps and R3 = 1 Mbps.

a) Assuming no other traffic in the network, what is the throughput for the file transfer?

b) Suppose the file is 4 million bytes. Dividing the file size by the throughput, roughly how long will it take to transfer the file to Host B?

c) Repeat (a) and (b), but now with R2 reduced to 100 kbps.

Question 4: [5 + 5= 10 Points]

a) Consider an e-commerce site that wants to keep a purchase record for each of its customers. Describe how this can be done with cookies.

b) What advantage does a circuit-switched network have over a packet-switched network? What advantages does TDM have over FDM in a circuit-switched network?