**Class Test #3**

**CS 414: Computer Communication Networks**

Department of Electrical (Electronics) Engineering

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Q1. 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). The characters *\r \n>* are carriage return and line-feed character. Answer the following questions,(12)

GET /cs453/index.html HTTP/1.1\r\n Accept: \*/\*\r\n Accept-Language: en-us\r\n User-Agent: Mozilla/4.0 (compatible; MSIE 8.0; Windows NT 6.0; Trident/4.0; SLCC1; .NET CLR 2.0.50727; Accept-Encoding: gzip, deflate\r\n If-Modified-Since: Tue, 13 Jun 2006 16:13:58 GMT; length=3505\r\n Host: gaia.cs.umass.edu\r\n Connection: Keep-Alive\r\n

1. What is the URL of the document requested by the browser?

A1a. The document request was [http://gaia.cs.umass.edu/cs453/index.html.](http://gaia.cs.umass.edu/cs453/index.html) The Host: field indicates the server's name

and /cs453/index.html indicates the file name.

1. What version of HTTP is the browser running?

A1b. The browser is running HTTP version 1.1, as indicated just before the first <\r\n pair.

1. Does the browser request a non-persistent or a persistent connection?

A1c. The browser is requesting a persistent connection, as indicated by the Connection: keep-alive.

1. What is the IP address of the host on which the browser is running?

A1d. This is a trick question. This information is not contained in an HTTP message anywhere. So there is no way to

tell this from looking at the exchange of HTTP messages alone. One would need information from the IP

datagrams (that carried the TCP segment that carried the HTTP GET request) to answer this question.

Q2. **True or false.**(8)

1. A user requests a Web page that consists of some text and two images. For this page, the client will send one request message and receive three response messages?

A2a. False

1. Two distinct Web pages (e.g., [www.mit.edu/research.html](http://www.mit.edu/research.html) and [www.mit.edu/students.html)](http://www.mit.edu/students.html)) can be sent over the same persistent connection?

A2b. True

1. With non-persistent connections between browser and origin server, it is possible for a single TCP segment to carry two distinct HTTP request messages?

A2c. False

1. The Date: header in the HTTP response message indicates when the object in the response was last modified?

A2d. False

Q3. For a communication session between two hosts, which host is the client and which is the server?(3)

A3. The process which initiates the communication is the client; the process that waits to be contacted is the server.

Q4. What information is used by a process running on one host to identify a process running on another host?(3)

A4. The IP address of the destination host and the port number of the destination socket.

Q5. Why do HTTP, FTP, SMTP, POP3 and IMAP run on top of TCP rather than UDP?(3)

A5. The applications associated with those protocols require that all application data be received in the correct order

and without gaps. TCP provides this service whereas UDP does not.

Q6. The following question deal with CRC error decoding.

1. Give a message M = 10101101101 determine the CRC using the polynomial P = x5 + x4 + x2 + 1.
2. What is the transmitted message T?
3. How does the receiver check whether the message T was transmitted without errors?

Q7. The following question deal with CRC error decoding.

1. Give a message M = 101011110101110 determine the CRC using the polynomial P = x5 + x4 + x2 + 1.
2. What is the transmitted message T?
3. How does the receiver check whether the message T was transmitted without errors?