ASSIGNMENT – 2
DATA NETWORKING – TELE5330
Max Marks: 100

Q1: Answer the following questions: [4x6=24 Marks]

a) What information is used by a process running on one host to identify a process running on another host?
b) Why is DNS hierarchical, not centralized?
c) For long distance network paths, which one would you use: Persistent or Non-Persistent HTTP? Why?
d) Since UDP provides neither reliable data transfer nor congestion control, why do applications still use UDP instead of TCP?
e) What benefits does IMAP provide over POP3?
f) How is SMTP different from HTTP?

Q2: A web page consists of a base file of L bits. With the file, there are M objects each having same size as that of the file. The link's rate is R bits/sec and RTT (Round Trip Time) is T. Answer the following questions using the information mentioned. Give the total time expression for each scenario **INCLUDING** Propagation and Transmission delays. (Ignore Processing and Queueing delays) [7x4=28 Marks]

a) Non-Persistent Connection
b) Persistent Connection
c) Persistent with Pipelining
d) Non-Persistent Parallel Connection (5 Max, for this part **only** take M=10)

Q3: Consider a process running on a machine having a UDP socket XXXX. Two Hosts, X and Y send a UDP segment to the port no. XXXX. Will a separate socket be created for both the segments? How would they be distinguished? [6 Marks]

Q4: Consider a web server running on port 80, using a persistent connection. Hosts X and Y send a request each to the server. Will a separate socket be created for both the requests? How would they be distinguished? What would be the destination port for both the requests? [6 Marks]

Q5: Consider the HTTP Request and Response messages below and answer the following questions: [2.5x10=25 Marks]

REQUEST:

```
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 name of the file the browser has requested for?
b) What is the URL of the requested page?
c) What is the IP address of the user?
d) Is it using Persistent or non-Persistent connection?
e) What is the version of HTTP being used? How many versions of HTTP are there?
f) What is the name of the browser? What is the need to specify the browser's details in the HTTP request?

RESPONSE:

```
HTTP/1.1 200 OK\r\n
Date: Sun, 26 Sep 2010 20:09:20 GMT\r\n
Server: Apache/2.0.52 (CentOS)\r\n
Last-Modified: Tue, 30 Oct 2007 17:00:02 GMT
   \r\n
ETag: "17dc6-a5c-bf716880"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 2652\r\n
Keep-Alive: timeout=10, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html;
   charset=ISO-8859-1\r\n
\r\n
data data data data data ...
```

a) Was the server able to successfully find the document or not? What time was the document reply provided?
b) When was the document last modified?
c) How many bytes are there in the document being returned?
d) Did the server agree to a persistent connection?

Q6: Answer what is the TYPE of each DNS request given below. Also explain in one line the use of the TYPE answered. [5 Marks]

NAME	TTL	TYPE	DATA
test.com	1000		dns1.test.com
dns1.test.com	1000		192.168.1.1
test.com	1000		a.test.com
test.com	1000		mail.test.com
192.168.1.1	1000		dns1.test.com

Q7: Consider a Server with an upload capacity C and K clients with uniform upload capacity U and uniform download capacity D, how much time does it take for an ideal P2P system to transmit a file of size S to all K clients? Choose the correct option and **briefly explain your answer as well.** [6 Marks]

a) KS/C
b) min(S/C, S/U, S/D)
c) max(S/C, S/D, S/(C/K+U))
d) max(S/D, S/C, KS/(C+KD))
e) KS/(C+KD+KU)