19k-1048 (SE-A) Assignment no: 08 CS-3001

Question no: 01

a) False
b) True
c) False
d) False
e) False.

Question no: 03

- Application layer protocol:
  DNS, besides HTTP.

- Transport layer protocol:
- UDP transport layer for DNS and
  TCP transport layer for HTTP.

Question no: 04

a) URL of the document requested by the browser
http://gaia.cs.umass.edu/cs453/index.html
b) The browser is running HTTP version: 1.1.
c) Since the connection is "keep-alive" the browser requested a persistent connection.
d) IP of the host is not written in the message.
e) Browser: Mozilla 5.0, browser type information is needed because different browsers may handle same webpage differently.

Question no: 05

a) The status code: "200 Ok" indicate that the document was found successfully.
Reply: Tue, 07 Mar 2008, 12:39:45 GMT.

b) The document was last modified on Saturday, 10 Dec 2005, 18:27:46 GMT.

c) 3874 bytes are being returned.

d) First five bytes returned: <!doc.
Persistent connection agreed since;
Connection: keep-Alive.

Question no: 06

- Total time to get IP address since it is not stored in the cache: $RTT_1 + RTT_2 + : .. + RTT_n$ since n DNS are visited before host receives IP address.
- RTT_0 to set up TCP connection.
- RTT_0 to receive objects.
- Total response time:
  $2RTT_0 + RTT_1 + \cdots + 2RTT_n$.

Question No: 09

- I found it on internet that you can do it by using "dig" query. For example dig flexstudent.nu.edu.pk will give us the query time for finding it, if it is 0msec that means it was cached in our local DNS.

Question No: 10

Formula(s):

Client-Server:

$D_{cs} = \max\{NF/u_s, F/d_{min}\}$

Peer-to-Peer:

$D_{p2p} = \max\{F/u_s, F/d_{min}, NF/(u_s + \sum_{i=1}^{N} u_i)\}$

$F = 30\,GB = 30 \times 1024$

$u_s = 30\,mbps$

$d_{min} = d_i = 3\,Mbps$

Question no: 08

- We can take record of DNS caches in the local DNS server time to time, the web server record that appears the most is the most popular server.
  If USERS are interested in a web server then DNS requests for that server are sent more frequently.

Question no: 011

(a) A distribution scheme in which server send file to each client in parallel with a rate of U_s/N. This is less than download rate so $U_s/N \leq d_{min}$.

- Time for each client to receive the file is NF/U_s, the overall distribution time is also NF/U_s

(b) server sends the file to client in parallel at a rate of d_{min}, by assumption $U_s/N \geq d_{min}$, time for each client to receive the file F/d_{min}
Overall distribution time F/d_{min}.

c) $D_{cs} \geq \max\{NF_{lus}, F_{ldmin}\}$.

Question No: 07

a) Average response time: $\Delta = \frac{L}{R}$

$\Rightarrow \frac{1,000,000}{15,000,000} \Rightarrow 0.067$

- Traffic intensity $\Rightarrow \frac{L \cdot \alpha}{R} \Rightarrow (16)(0.067) \Rightarrow 1.067$
- Avg access delay $= (1.067)/(1-0.907) \Rightarrow 11.47$ sec
- Total Avg response time: $11.47 + 3 = 14.47$ sec

b) miss rate : 40%
Hit rate : ?

$\Rightarrow$ Avg rate: $0.109 + 3 = 3.109$

$\Rightarrow (11.47)(0) + (0.4)(3.109) \Rightarrow$ **1.243 sec** Ans.

Question No: 07

- imessage and whatsapp are instant messenger services, imessage supports text and media we send to IOS devices over cellular network or WiFi and is based on APNs (Apple Push Notification service) protocol, while whatsapp is available on different platforms and uses XMPP (Extensible, Messaging and presence Protocol).

- SMS allow sending and receiving of data/messages over cellular network. SMS is realized through Mobile Application Part (MAP) of SS#7 protocol.

- imessage and whatsapp differ from SMS as they support photos, videos, files etc. while original message can only send text message. and they work on WiFi while SMS don't