P3

Transport layer protocol: UDP for DNS, TCP for HTTP
Application layer protocol: DNS, HTTP

P4

a. URL: http://gaia.cs.umass.edu/cs453/index.html
b. Http Version: 1.1
c. It's a persistent connection.
d. Sorry --- We don't know
e. Browser type is Mozilla/5.0. It's needed as the server have to send different versions of the same object to different types of browsers.

P5

a. The server could find it successfully. The time is Tue, 07 Mar 2008 12:39:45 GMT
b. Last Modified: Sat, 10 Dec 2005 18:27:46 GMT
c. 3874 bytes
d. First 5 bytes: <!doc. The server agrees a persistent connection.

P8

a) $RTT_1 + \cdots RTT_n + 2RTT_0 + 8 \cdot 2RTT_0 = 18RTT_0 + RTT_1 + \cdots + RTT_n$
b) $RTT_1 + \cdots + RTT_n + 2RTT_0 + 2 \cdot 2RTT_0 = 6RTT_0 + RTT_1 + \cdots + RTT_n$
c) $RTT_1 + \cdots + RTT_n + 2RTT_0 + RTT_0 = 3RTT_0 + RTT_1 + \cdots + RTT_n$

P14

SMTP mark the end of a message body with a line

containing only a period, while HTTP with Content-Length header field.

HTTP can't use the same method of SMTP, as HTTP message might be binary data, while in SMTP it must be in 7-bit ASCII format.