ITS 323 – QUIZ 7A

First name: _____   Last name: _____

ID: _____   Total Marks: _____
<div align="right">out of 10</div>

Question 1 [3 marks]

TCP at Host A sends 6 DATA segments, one immediately following another, to Host B. Each DATA segment has a transmission time of 15ms. Host B sends an ACK segment for each DATA segment received. Each ACK has a transmission time of 1ms. The one-way propagation time between A and B is 20ms. After transmitting an entire DATA segment, TCP starts a retransmission timer, with timeout value of 100ms.

If the third (3rd) DATA segment is lost, at what time does the retransmission of this DATA segment start if:

    a) TCP Basic Retransmission is used (no Fast Retransmit)? [1 mark]

    b) TCP Basic Retransmission and Fast Retransmit are used? [2 marks]

Question 2 [3 marks]

Multiple choice. Choose only one answer.

    a) Which field in the TCP header is used for flow control?

        i.   Sequence number

        ii. Acknowledgement number

        iii. Window

        iv. Urgent pointer

    b) Which HTTP request method is most likely used when submitting data from an HTML form to a server?

        i.   GET

        ii. PUT

        iii. OPTIONS

        iv. POST

        v. HEAD

    c) After setting up a connection with ISN=0, a TCP sender receives 10,000 bytes from the application, and divides the data into segments each with 2,000 bytes of data. What is the sequence number in the TCP header of the third segment?

        i. 2000

        ii. 2001

        iii. 4000

        iv. 4001

        v. 6000

        vi. 6001

Question 3 [2 marks]

The following shows the contents of a HTTP Request message and the resulting HTTP Response message.

Request

```
GET /~steven/tu130/ HTTP/1.1
Host: ict.siit.tu.ac.th
User-Agent: Mozilla/5.0 (Windows) Gecko Firefox/3.0.2
Accept: text/html,application/xhtml+xml
Accept-Language: en-gb,en;q=0.7,th;q=0.3
Accept-Encoding: gzip,deflate
Accept-Charset: UTF-8,*
Keep-Alive: 300
Connection: keep-alive
Referer: http://ict.siit.tu.ac.th/~steven/
```

Response

```
HTTP/1.0 200 OK
Date: Thu, 25 Sep 2008 09:08:17 GMT
Server: Apache/2.2.4 (Ubuntu) PHP/5.2.3-1ubuntu6.4
Last-Modified: Mon, 07 Jul 2008 09:07:14 GMT
ETag: "3c22ff-286c-66bf3480"
Accept-Ranges: bytes
Content-Length: 10348
Content-Type: text/html
X-Cache: MISS from proxy5.siit.tu.ac.th
X-Cache-Lookup: MISS from proxy5.siit.tu.ac.th:8080
Via: 1.0 proxy5.siit.tu.ac.th:8080 (squid/2.6.STABLE6)
Connection: keep-alive

<html xmlns="http://www.w3.org/1999/xhtml" >
<head>
<title>Integrated Science and Technology (TU 130)</title>
<link rel="StyleSheet" href="../css/site.css" type="text/css" />
</head>
<body>

<h1>Integrated Science and Technology (TU 130)</h1>

   <<< … the remainder of the HTML – not shown in this Quiz question … >>>

</html>
```
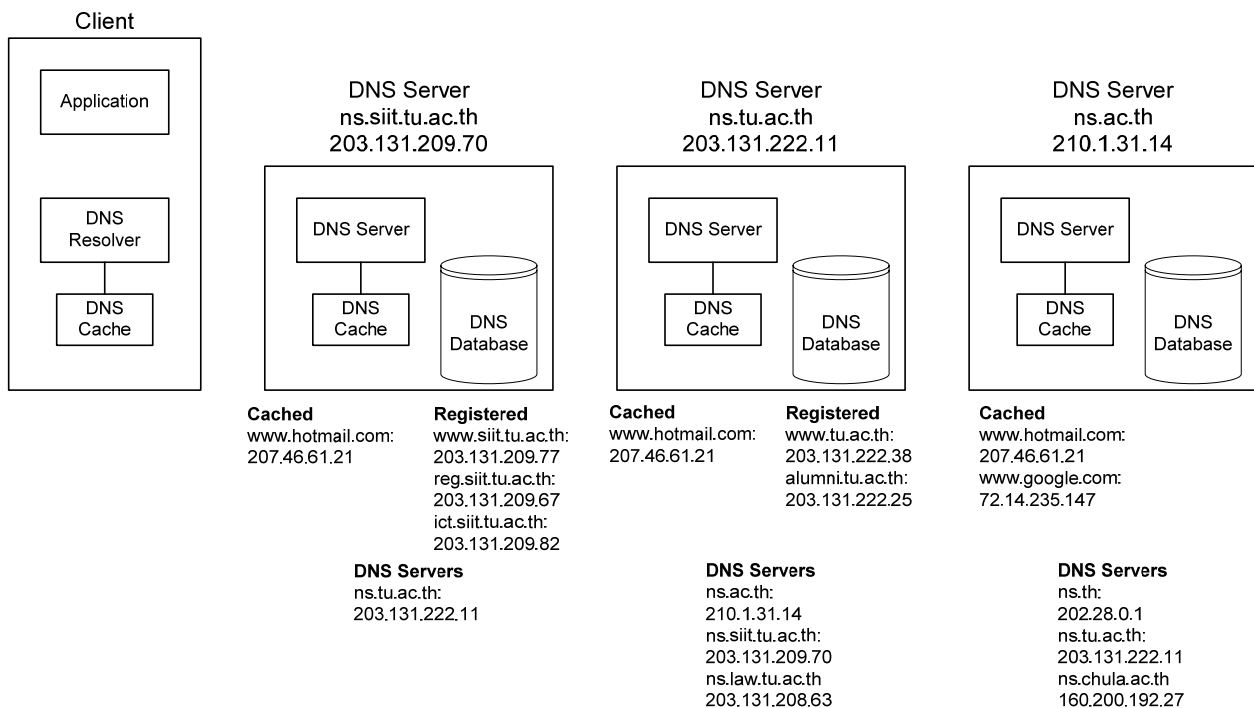
a) What is the size of the requested file? [0.5 mark]

b) What was the URL that the user clicked on (or typed into their browser)? (Give the full URL) [0.5 mark]

c) Was the requested file secured (that is, password protected)? Explain why or why not. [1 mark]

Question 4 [2 marks]

Consider the DNS configuration in the following figure. Assume the Client DNS Resolver is configured so that it knows the IP address of its local DNS server (ns.siit.tu.ac.th, 203.131.209.70).

Client

| Application |

| DNS Resolver |

| DNS Cache |

DNS Server
ns.siit.tu.ac.th
203.131.209.70

| DNS Server |
| DNS Cache | DNS Database |

Cached
www.hotmail.com:
207.46.61.21

Registered
www.siit.tu.ac.th:
203.131.209.77
reg.siit.tu.ac.th:
203.131.209.67
ict.siit.tu.ac.th:
203.131.209.82

DNS Servers
ns.tu.ac.th:
203.131.222.11

DNS Server
ns.tu.ac.th
203.131.222.11

| DNS Server |
| DNS Cache | DNS Database |

Cached
www.hotmail.com:
207.46.61.21

Registered
www.tu.ac.th:
203.131.222.38
alumni.tu.ac.th:
203.131.222.25

DNS Servers
ns.ac.th:
210.1.31.14
ns.siit.tu.ac.th:
203.131.209.70
ns.law.tu.ac.th
203.131.208.63

DNS Server
ns.ac.th
210.1.31.14

| DNS Server |
| DNS Cache | DNS Database |

Cached
www.hotmail.com:
207.46.61.21
www.google.com:
72.14.235.147

DNS Servers
ns.th:
202.28.0.1
ns.tu.ac.th:
203.131.222.11
ns.chula.ac.th
160.200.192.27

The time to send a DNS message between any two computers on the Internet is 10ms (e.g. from Client to ns.siit.tu.ac.th is 10ms). Ignore any other delays (such as processing within each computer).

How long does the application wait for DNS protocol before it can send an IP datagram to the web server:

a) www.hotmail.com

b) www.tu.ac.th