Assignment 5

Due Monday May 12. Show your work. Hand in your assignment using the appropriate dropbox on the course web site. Assignments submitted after the solutions are made available will be given a mark of zero. (version of May 5.)

Question 1

Your PC receives DHCP configuration with an IP address, netmask and name server but no default route. You try to access a web server and instead see an ICMP message. What type of ICMP message did you most likely get? What host did it come from?

Question 2

Give the values of the bytes, in hexadecimal notation, of the UDP header sent from port 5179 to port 53 if the UDP payload contains 36 bytes. You can set the checksum to 0.

Question 3

What TCP flags are likely to be set in a frame received in response to a TCP frame with the FIN and ACK bits set? To one with only the SYN bit set?

Question 4

The last frame sent in a TCP exchange has only the ACK bit set, a Sequence value of 105, and Acknowledge value of 3235 and Length value of 0. How much data was sent? Received?

Question 5

Compute the IP (one's-complement) checksum of the following sequence of bytes (all are in hexadecimal):

```
92 58 01 20 00 01
03 63 6f 6d 00 00
```

Question 6

You receive LSA's showing the following link costs between pairs of routers:

```
A   B   Metric
-------------
1   2   10
1   3   10
2   3   2
2   4   6
3   4   5
```

(a) Draw a graph of the network. Show the link costs on the lines connecting the routers. Assume the costs in both directions are the same.

(b) Derive the shortest path first routing table for routers 1 and 4.

Question 7

Use Wireshark to view the response when you retrive the URL http://www.bcit.ca using a web browser (you can use the expression `http` to filter only http protocol packets).

Answer the following questions about the *initial* request (for /):

(a) what version of HTTP is used?

(b) what host is the request for?

(c) what client software is making the request?

Answer the following questions about the *initial* response:

(a) what server software is generating the response?

(b) what is the content-type? is it one specified in the request?

(c) what is the content-encoding? is it one specified in the request?

Question 8

Create a text file `asg5.html` containting the text "I go here".

Add the HTML markup required to link the word 'here' to the URL `http://www.bcit.ca/`.

Test your page by it by opening it with a web browser (use the menu File->Open File or a file:// URL) and clicking on the link.

Your answer should consist of the HTML you generated and the page displayed by the browser (a hand-drawn facsimile is OK).