Part 1: (39 points - 3 points for each problem)

1. What protocol is widely used by all Web communications?
   (B) NNTP (B) HTTP (C) FTP (D) PPP

2. Which statement about the IP address is incorrect?
   (A) It is a unique 32-bit number. (B) It is written as four 8 bit numbers, separated by periods.
   (C) For each IP address, there is a corresponding domain name. (D) None of above

3. The default port for the HTTP server is:
   (A) 22 (B) 25 (C) 70 (D) 80

4. Which is a Web server?
   (A) IIS (B) Internet Explorer (C) Mozilla (D) lynx

5. If we want some text to appear in boldface, which tag should be used?
   (A) <bold> (B) bd (C) <b> (D) <bf>

6. Which attribute of the tag, <img />, is used to specify text for the image?
   (A) src (B) alt (C) text (D) txt

7. Which tag is used to specify the term to be defined in the definition list?
   (A) <df> (B) <dl> (C) <dd> (D) <dt>

8. Which predefined variable in Perl has the value of the system variable errno?
   (A) @ (B) $ (C) $$ (D) $!

9. How do you get the value of the reference variable $fruit?
   (A) \$fruit (B) &$fruit (C) $$fruit (D) /$fruit

10. Which function is used to specify the local variable?
    (A) my (B) home (C) define (D) private

11. How is an ampersand sign encoded in a query string? Its decimal ASCII value is 38.
    (A) %38 (B) @38 (C) %26 (D) %28

12. How does a Perl program includes the CGI Perl module and use standard symbols?
    (A) include CGI qw(:standard); (B) use CGI qw(standard); (C) use CGI standard; (D) None of above

13. How do you get the documentation of the CGI.pm module?
    (A) perldoc CGI (B) perldoc -d CGI (C) perldoc -f CGI (D) perldoc -h CGI

Part 2: (61 points)

1. Briefly explain these terminologies. If they are acronyms, also write what they stand for. (12 points)
   (a) DNS The domain name system is used to map domain names to IP addresses and vice versa.
   (b) URL A Uniform/Universal Resource Locator is used to identify the address of a document (resource) on the Internet.
   (c) XML The eXtensible Markup Language is a language designed to create markup languages with their own specification.
   (d) CGI The Common Gateway Interface is the interface between a browser and software on the server.

2. Describe the five most commonly used HTTP request methods. (10 points)

Ans:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET</td>
<td>Return the contents of the specified document</td>
</tr>
<tr>
<td>HEAD</td>
<td>Return the header information for the specified document</td>
</tr>
<tr>
<td>POST</td>
<td>Execute the specified document, using the enclosed data</td>
</tr>
<tr>
<td>PUT</td>
<td>Replace the specified document with the enclosed data</td>
</tr>
<tr>
<td>DELETE</td>
<td>Delete the specified document</td>
</tr>
</tbody>
</table>

3. What are the three categories of Perl variables? Give an example of how values can be assigned for each type of variables. (6 points)

Ans:

Scalar variables: $name = 2,
Array: @list = (2, 3),
Hash: %ages = ("John" => 33, "Tom" => 17).

4. Give one example for pass-by-value and one for pass-by-reference in Perl? (6 points)

Ans:

```perl
my ($a, $b) = (2, 3);
swop($a, $b);
swap($a, $b);

sub swop { # Call-by-value
    my ($a, $b) = @_; 
    $temp = $a;
    $a = $b;
    $b = $temp;
}

sub swap { # call-by-reference
    my ($c, $d) = @_; 
    $temp = $$c;
    $$c = $$d;
    $$d = $temp;
}
```

5. Consider the following Perl code. Write the results after running this code. (6 points)

```perl
@list = (10, 2, 7, 6, 9);
push @list, (4, 8);
$len = @list;
print "$len \n";
push "@list \n";
$val = shift @list;
print "$val \n";
```

Ans:

```
7
6
10
```
6. Write a Perl Program that reads in and process a text file in the following way:

(a) transform the text within the double quote pair into uppercase letters,
(b) change the ending period sign (.) within the double quote pair to the exclamation sign (!).

For example, the program converts I said, "Hello." to I said, "HELLO!". (9 points)

```perl
#!/usr/bin/perl -w
while(<>) {
    s/"(["']+)\.(\s*\.)"/\1uc($2)\!/ge;
    print;
}
```

7. (a) Write a HTML document with a text input form to collect the user's name. This HTML document will request a CGI program thanks.pl in the cgi directory of your account at kirk.cs.wichita.edu:6550.

(b) Write the CGI program thanks.pl that stores the user's name into a file name.dat and returns a thanks message with the user's name to the user's browser.

Hint: Use the following functions in CGI.pm: param(), header(), start_html(), and end_html(). (12 points)

Ans:

(a) `<html>
    <head>
    <title>HTML to call the CGI-Perl program thanks.pl</title>
    </head>
    <body>
    <form action = "http://kirk.cs.wichita.edu:6550/cgi/cs655/thanks.pl"
        method = "POST">
        <input type = "text" name = "name" size = "20">
        <input type = "submit" value = "Submit">
    </form>
    </body>
</html>

(b) `#!/usr/bin/perl -w
  # thanks.pl - a CGI program that stores the name into name.dat and
  # returns a thanks message to the user

  use CGI qw(:standard);

  open (OUT, ">name.dat");
  my $name = param("name");
  print OUT "$name\n";
  print header();
  print start_html("Thank You");
  print "$name! Thanks You!";
  print end_html();`