Question 1

a

An empty element, an inline element and a block element

Empty element:
Inline element:
Block element:

b

Difference between em and pt

em is equal to the current font-size. For example, if the font-size of the document is 12pt then 1em is equal to 12pt.

Pt is points. One point is equal to 1/72 of an inch. Points are like pixels, they are fixed-size units and cannot scale in size.

c

If the width property of an element is set to 120px and the margin and padding are each set to 10px, what is the total width of the space occupied by the element?

130px

d

** vs **

They are both used to group together a chunk of HTML. The difference is that span element is in-line and usually used for a small chunk of HTML inside a line whereas a div element is block-line and used to group larger chunks of code.

e

GIF is better for computer generated images with limited palettes. GIF files are smaller size so it's better for websites. GIF is also lossless compression while JPEG is lossy meaning that JPEG flies will lose some quality.

f

HTTP request

1. A start-line describing the requests to be implemented.
2. An optional set of HTTP headers specifying the request
3. A blank line indicating all meta-information for the request have been sent
4. An optional body containing data associated with the request(like content of an HTML form)

g

Three examples of informations that are placed in the HTTP headers

The header tells the web server the browser's configuration and the document formats it will accept. For example:

- Accept: text/html
- Accept-Charset: utf-8
- User-Agent: Mozzila/4.05

h

In the context of a search engine, what is a spider(crawler)

A search engine spider, also known as a web crawler, is an Internet bot that crawls websites and stores information for the search engine to index. Spiders visit web pages in search of new data to add to the index. Spiders recognise hyperlinks, which they can either follow right away, or take a note of it and crawl it later.

Then when the user performs a search, the search engine uses the indexes to find documents that match the query terms and it ranks the found documents.

<u>Question 2</u>

b

Two examples of HTML entities

&pound = £

&gt = >

c

GET vs POST

GET method is used to request datas from a specified resource. GET requests should never used when dealing with sensitive data. GET appends data to the URL. Example: Searching on Google.

POST is used to send data to a server to create/update a resource. POST request doesn't append data to the URL. Example: A form which lets the user change password.,

d

Hidden form fields

Hidden form fields are not shown to the user so the user can't type anything into a hidden field. Often hidden forms have some value that the user cannot change.

e

Why is XML schema better than Document Type Definition(DTD)

XML Schemas support data types and namespaces. XML syntax is much simpler thus easier to learn, understand and maintain.

Question 3

a

5 layer protocol stack model

Application Layer

This is where the applications requiring communications live. Examples of these include email clients and web browsers. These applications use the transport layer to send requests to connect to remote hosts.

Transport Layer

This layer establish the connection between applications running on different hosts. It uses TCP for reliable connections and UDP for fast connections. It keeps track of the processes running in the applications above it by assigning port numbers to them and uses the Network layer to access the TCP/IP network.

Network Layer

This layer is responsible for creating the packets that move across the network. It uses IP addresses to identity the packet's source and destination.

Data Link Layer

This layer is responsible for creating the frames that move across the network. These frames encapsulate the packets and use MAC addresses to identify the source and destination.

Physical Layer

This layer encodes and decodes the bits found in framer and includes the transceiver that drives and receives the signals on the network.

b

Determine the classes of networks (A, B or C) to which the following IP addresses belong:

192.168.3.112

C class

131.251.120.14
B class

10.14.4.42
A class

c

What is the purpose of a Domain Name Server(DNS)?
It's a distributed database of domain names and corresponding IP addresses.

d

What is a Uniform Resource Locator(URL) and describe the syntax
A uniform resource locator (URL) is the address of a resource on the Internet. A URL indicates the location of a resource as well as the protocol used to access it. It contains the following information:

- The protocol used to access the resource
- The location of the server, either the IP address or domain name
- The port number on the server (optional)
- The location of the resource in the directory structure of the server
- A fragment identifier (optional)

scheme://location:port/file-on-server.htm?querystring=1

f

Write an SQL query to find the names of the ships of Andromeda class capable of travelling at a warp speed 8 or above
SELECT name FROM Fleet WHERE class="Andromeda" AND maxWrap >= 8

Write an SQL query to get all available information about the four slowest ships in the fleet
SELECT * FROM Fleet ORDER BY maxWrap ASC LIMIT 4

Write an SQL query to determine the names of the ships with lower than average crew complement
SELECT name FROM Fleet WHERE crew < (SELECT AVG(crew) FROM Fleet)