



NCC EDUCATION
INTERNATIONAL DIPLOMA
IN
COMPUTER STUDIES
WEB DESIGN
MARCH 2009 – LOCAL EXAMINATION

MARKING SCHEME

Markers are advised that many answers in Marking Schemes are **examples only** of what we might expect from candidates. Unless a question **specifically states** that an answer is demanded in a particular form, then an answer that is correct, factually or in practical terms, must be given the available marks.

If there is doubt as to the correctness of an answer the relevant NCC Education textbook should be the first authority.

This Marking Scheme has been prepared as a guide only to markers. This is **ABSOLUTELY NOT** a set of model answers; **NOR** is the Marking Scheme exclusive, for there will frequently be alternative responses which will provide a valid answer.

Throughout the question, please credit any valid alternative point.

Notice to Markers

Where markers award half marks in any part of a question they should ensure that the total mark recorded for a question is rounded up to a whole mark.

SECTION A

ANSWER ALL QUESTIONS IN THIS SECTION

Marks

QUESTION 1

4

Explain the difference between XML and XHTML.

Answer XML

- *eXtensible Markup Language is not a specific language in itself, but rather a robust set of rules for creating other markup languages. [1]*
- *XML has proven to be a powerful tool for sharing data between applications. [1]*

XHTML

- *XHTML is a stricter version of HTML, designed to overcome some of the problems that competing HTML standards have introduced, and to better integrate HTML with XML. [2]*

QUESTION 2

4

List FOUR (4) strategies for dealing with the different platforms that may be used to view your web pages.

Answer • *Allow some variation [1]*

- *Specify common fonts and provide alternatives [1]*
- *Be sure media players are available for all platforms [1]*
- *Don't mimic a particular operating system in your interface design [1]*

QUESTION 3

4

Write out the minimal structure of an (X)HTML document.

Answer `<html>` [1/2]

`<head>` [1/2]

`<title> Title </title>` [1]

`</head>` [1/2]

`<body>` [1/2]

`</body>` [1/2]

`</html>` [1/2]

QUESTION 4

4

What is the JPEG format? What are the advantages and disadvantages of the JPEG format?

Answer • *JPEG stands for Joint Photographic Experts Group. JPEG's full-colour capacity and compression scheme make it the ideal choice for photographic images [2]*

Advantage

- *With JPEG, you don't have to worry about limiting yourself to 256 colours the way you do with GIFs. Instead, they are 24-bit images, capable of displaying colours from the millions of colours in the RGB colour space. [1]*

Disadvantage

- *The JPEG compression scheme is lossy, which means that some of the image information is thrown out in the compression process. Be aware that once image quality is lost in JPEG compression, you can never get it back again. [1]*

QUESTION 5

4

Name FOUR (4) significant syntax requirements in XHTML.

- Answer*
- *Element and attribute names must be lowercase.*
 - *All elements must be closed (terminated), including empty elements.*
 - *Attribute values must be in quotation marks.*
 - *All attributes must have explicit attribute values.*
 - *Elements must be nested properly.*
 - *Always use character entities for special characters.*
 - *Use id instead of name as an identifier.*
 - *Scripts must be contained in a CDATA section.*
- [any 4, 1 mark each]*

QUESTION 6

4

Describe how to use the <select> element. Give an example of html that correctly uses the <select> element.

- Answer* *The <select> element lets you create a list box or scrollable list of selectable options. [1] The <select> element is a container for the <option> element. Each <option> element contains a list value. [1]*

The following code shows the standard type of list box; the user can choose one value from the list.

```
<select name="boats"> [ 1/2 ]  
<option>Kayak</option> [ 1/2 ]  
<option>Family Boat</option> [ 1/2 ]  
</select> [ 1/2 ]
```

QUESTION 7

4

Explain briefly TWO (2) general guidelines for working with background images.

- Answer*
- *Use a simple image that won't interfere with the legibility of the text over it.*
 - *Always provide a background-colour value that matches the primary colour of the background image. If the background image fails to display, at least the overall design of the page will be similar.*
 - *As usual for the Web, keep the file size of background images as small as possible.*
- [any 2, 2 marks each]*

QUESTION 8

4

State FOUR (4) tests that should be carried out on every website.

- Answer*
- *Is all the content there?*
 - *Are there typos or grammar errors?*
 - *Do all the links work?*
 - *Are all the images showing?*
 - *Are all the scripts and applications functioning properly?*
- [any 4, 1 mark each]*

QUESTION 9**4**

List TWO (2) advantages and TWO (2) disadvantages to renting server space from a professional hosting service.

Answer Advantages

- *Scalable packages offer solutions for every size of website. With some research, you can find a host that matches your requirements and budget. [1]*
- *You get your own domain name (for example, www.littlechair.com). [1]*

Disadvantages

- *Finding the right one requires research. [1]*
- *Robust server solutions can get expensive, and you need to watch for hidden charges. [1]*

QUESTION 10**4**

Describe the <form> element, and the attributes associated with it.

Answer The <form> element is the container for creating a form. [1]

A form has a number of attributes that describe how the form data is handled. They are as follows:

action: The URL of the application that processes the form data; this URL usually points to a CGI script file. [1]

method: Specifies the HTTP method used to submit the form data; the default value is “get”.

- *get: The form data is appended to the URL specified in the action attribute*
- *post: The form data is sent to the server as a separate message [1]*

The name attribute identifies the variable name for the control. [1]

Total 40 Marks

SECTION B
ANSWER ANY TWO QUESTIONS

QUESTION 1

Marks

Throughout the question, please credit any valid alternative point.

- a) Explain the difference between an Internet Service Provider (ISP) and a Web hosting service.

6

Answer ISP

An ISP (Internet Service Provider) is the company you go to if you want access to the Internet from your home or office. [1] You can think of an ISP as a provider of a pipeline from your computer to the worldwide network of the Internet via dial-up, DSL, cable modem, or ISDN connections. [1] AOL, CompuServe, and Earthlink are examples of nationwide ISPs, but there are also smaller, local ISPs in nearly every urban area. [1]

Web hosting services

Their business is based on renting out space on their computers. [1] They take care of the server software, keeping the lines working, and so on. They also provide email accounts and may also include special features such as mailing lists or e-commerce solutions for your site. [1] However, they do not tend to offer Internet access. They expect you to take care of that yourself. In most cases, you'll need both an ISP and a hosting company. [1]

- b) How is the File Transfer Protocol used to upload files?

12

Answer Step 1: *Make sure you are online. [1] You can launch your FTP program before or after getting online. [1]*

Step 2: *Open a connection to the server and enter your information. [1] This is usually the point at which you are asked to enter the server name, login, password, and the optional settings mentioned earlier. [1]*

Step 3: *Navigate to your local and remote root servers. [1] Many FTP clients feature two windows: one gives you a view of the files on your local hard drive, the other is a view of the files on the remote server. [1]*

Step 4: *Select the file on your local hard drive and upload it. [1] FTP programs vary on how the upload option is presented once your file is selected, but it's usually fairly intuitive. [1]*

Step 5: *Your FTP client will probably provide some sort of feedback that shows the progress of the upload. [1] When the file shows up in the file list in the remote server window, and the file size matches that shown on your local computer, you know that it has arrived. [1]*

Step 6: *Check it in a browser. [1] If you need to make changes, do so on the local document, save it, and then upload it again. [1]*

c) Briefly explain TWO (2) options for obtaining a domain name.

6

Answer It has become common for companies that provide web hosting to register domain names as part of the process of setting up an account. [1] They offer this service for your one-stop-shopping convenience. [1] But be sure to ask specifically - some still require you to register your domain on your own. [1]

You can also register one yourself directly from a domain name registrar. [1] Domain name registries are regulated and overseen by ICANN (Internet Corporation for Assigned Names and Numbers). [1] ICANN also makes sure that domain names are assigned to a single owner. [1]

d) Discuss the origin and function of the Domain Name System (DNS).

6

Answer

- The Domain Name System (DNS) was developed to allow users to refer to a server by its domain name. [2]*
- The numeric IP address is useful for computers, while the domain name is more accessible to humans. [2]*
- Matching the text domain names to their respective numeric IP addresses is the job of a separate DNS server. [2]*

Total 30 Marks

QUESTION 2

Marks

Throughout the question, please credit any valid alternative point.

- a) Briefly describe THREE (3) benefits of using Cascading Style Sheets.

6

- Answer*
- *Better type and layout controls. Presentational (X)HTML never gets close to offering the kind of control over type, backgrounds, and layout that is possible with CSS.*
 - *Less work. You can change the appearance of an entire site by editing one style sheet. Making small tweaks and even entire site redesigns with style sheets is much easier than when presentation instructions are mixed in with the markup.*
 - *Potentially smaller documents and faster downloads. Old school practices of using redundant font elements and nested tables make for bloated documents. Not only that, you can apply a single style sheet document to all the pages in a site for further byte savings.*
 - *More accessible sites. When all matters of presentation are handled by CSS, you can mark up your content meaningfully, making it more accessible for non-visual or mobile devices.*
 - *Reliable browser support. Nearly every browser in current use supports all of CSS Level 1 and the majority of CSS Level 2.*
- [any 3, 2 marks each]*

- b) Describe THREE (3) ways that style information can be applied to an (X)HTML document.

9

- Answer*
1. *External style sheets. An external style sheet is a separate, text-only document that contains a number of style rules. [1] It must be named with the .css suffix. The .css document is then linked to or imported into one or more (X)HTML documents. [1] In this way, all the files in a web site may share the same style sheet. This is the most powerful and preferred method for attaching style sheets to content. [1]*
 2. *Embedded style sheets. It is placed in a document using the style element and its rules apply only to that document. [1] The style element must be placed in the head of the document and it must contain a type attribute that identifies the content of the style element as "text/css" .[1]*

The style element may also include the media attribute used to target specific media such as screen, print, or handheld devices. [1]
 3. *Inline styles. You can apply properties and values to a single element using the style attribute in the element itself, as shown here:*
`<hi style="color: red">Introduction</hi> [1]`

To add multiple properties, just separate them with semicolons, like this:
`<hi style="color: red; margin-top: gem">Introduction</hi> [1]`

Inline styles apply only to the particular element in which they appear. Inline styles should be avoided, unless it is absolutely necessary to over-ride styles from an embedded or external style sheet. [1]

- c) Explain the THREE (3) general approaches to CSS page layout and give TWO (2) advantages and TWO (2) disadvantages to using each approach. **15**

Answer *Liquid page layouts (also called fluid layouts) follow the default behaviour of the normal flow. In other words, the page area and/or columns within the page are allowed to get wider or narrower to fill the available space in the browser window. [1]*

Advantages

- *You don't have to design for a specific monitor resolution.*
- *You avoid potentially awkward empty space because the text fills the window.*
- *Liquid pages keep with the spirit and nature of the medium.*

[any 2, 1 mark each]

Disadvantages

- *On large monitors, line lengths can get very long and uncomfortable to read. [1]*
- *They are less predictable. Elements may be too spread out or too cramped at extreme browser dimensions. [1]*

Fixed-width layouts stay put at a specified pixel width as determined by the designer. This approach is based on traditional guiding principles of graphic design, such as a constant grid, the relationship of page elements, and comfortable line lengths. [1]

Advantages

- *The layout is predictable.*
- *It offers better control over line length.*
- *Trends come and go; however, it is worth noting that many of the most well-known web designers use fixed-width designs.*

[any 2, 1 mark each]

Disadvantages

- *Content on the right edge will be hidden if the browser window is smaller than the page.*
- *Text elements still reflow if the user resizes the font size, so it doesn't guarantee the layout will stay exactly the same.*
- *Line lengths may grow awkwardly short at very large text sizes.*

[any 2, 1 mark each]

Elastic layouts (also called jello) expand or contract with the size of the text. If the user makes the text larger, the box that contains it expands proportionally. Likewise, if the user likes her text size very small, the containing box shrinks to fit. [1]

Advantages

- *Provides a consistent layout experience while allowing flexibility in text size. [1]*
- *Tighter control over line lengths than liquid and fixed layouts [1]*

Disadvantages

- *Images don't lend themselves to rescaling along with the text and the rest of the layout.[1]*
- *The width of the layout might exceed the width of the browser window at largest text sizes. This can be prevented with proper planning and/or the max-width property (unsupported in IE6 and earlier). [1]*

Total 30 Marks

QUESTION 3

Marks

Throughout the question, please credit any valid alternative point.

a) Briefly explain the difference between Rights-Managed images and Royalty-Free images.

4

- Answer*
- *Rights-managed means that the copyright holder (or a company representing them) controls who may reproduce the image. [1] In order to use a rights-managed image, you must obtain a license to reproduce it for a particular use and for a particular period of time.[1]*
 - *Using royalty-free artwork means you don't need to pay a licensing fee. [1] Royalty-free artwork is available for a one-time fee that gives you unlimited use of the image, but you have no control over who else is using the image. [1]*

b) All 8-bit indexed colour images use palettes to define the colours in the image. Briefly describe FIVE (5) common colour palettes.

10

- Answer*
- *Exact. Creates a custom palette out of the actual colours in the image if the image already contains fewer than 256 colours.*
 - *Adaptive. Creates a custom palette using the most frequently used pixel colours in the image. It allows for colour-depth reduction while preserving the original character of the image.*
 - *Perceptual (Photoshop/ImageReady only). Creates a custom colour table by giving priority to colours for which the human eye has greater sensitivity. Unlike Adaptive, it is based on algorithms, not just a pixel count. It generally results in images with better colour integrity than Adaptive palette images.*
 - *Selective (Photoshop/ImageReady only). This is similar to Perceptual, but it gives preference to areas of broad colour and the preservation of web-safe colours.*
 - *Web, Restrictive, or Web216. Creates a palette of colours exclusively from the web-safe palette. It is no longer necessary to use colours from the web palette, so this is not recommended.*
 - *Web Adaptive (Fireworks only). This adaptive palette converts colours to the nearest web palette colour. Because the web palette is obsolete and limited, this is no longer recommended.*
 - *Uniform. Creates a palette that contains an evenly stepped sampling of colours from the RGB spectrum.*
 - *Custom. This allows you to load a palette that was previously saved and apply it to the current image. Otherwise, it preserves the current colours in the palette.*
 - *System (Windows or Macintosh). Uses the colours in the specified system's default palette.*
 - *Optimised Median Cut (Paint Shop Pro only). This reduces the image to a few colours using something similar to an Adaptive palette.*
 - *Optimised Octree (Paint Shop Pro only). Use this palette if the original image has just a few colours and you want to keep those exact colours.*

[any 5, 2 marks each]

- c) Explain the following JPEG features.
- i. 24-bit Truecolor images 3
 - ii. Lossy compression 3
 - iii. Progressive JPEGs 3
 - iv. Decompression 3

Answer i) *24-bit Truecolor images - JPEGs don't use colour palettes like GIFs. [1] Instead, they are 24-bit images, capable of displaying colours from the millions of colours in the RGB colour space. [1] This is one aspect that makes them ideal for photographs - they have all the colours you'll ever need. [1]*

ii) *Lossy compression - The JPEG compression scheme is lossy, which means that some of the image information is thrown out in the compression process. [1] Fortunately, this loss is not discernible for most images at most compression levels. [1] When an image is compressed with high levels of JPEG compression, you begin to see colour blotches and squares (usually referred to as artifacts) that result from the way the compression scheme samples the image. [1]*

iii) *Progressive JPEGs - Progressive JPEGs display in a series of passes (like interlaced GIFs), starting with a low-resolution version that gets clearer with each pass. [1] In some graphics programs, you can specify the number of passes it takes to fill in the final image. [1] The advantage to using progressive JPEGs is that viewers can get an idea of the image before it downloads completely. [1]*

iv) *Decompression - JPEGs need to be decompressed before they can be displayed; [1] therefore, it takes a browser longer to decode and assemble a JPEG than a GIF of the same file size. [1] It is usually not a perceptible difference. [1]*

- d) Explain when you would consider using the PNG graphic format. 4

Answer *PNGs pack a lot of powerful options, but competition among web graphic formats nearly always comes down to file size. [1]*

For images that would typically be saved as GIFs, 8-bit PNG is a good option. You may find that a PNG version of an image has a smaller file size than a GIF of the same image, but that depends on how efficiently your image program handles PNG compression. If the PNG is smaller, use it with confidence. [1]

Although PNG does support 24-bit colour images, its lossless compression scheme nearly always results in a dramatically larger file than JPEG compression applied to the same image. For web purposes, JPEG is still the best choice for photographic and continuous tone images. [1]

The exception to the "smallest file wins" rule is if you want to take advantage of multiple levels of transparency. In that case, PNG is your only option and may be worth a slightly heftier file size. [1]

Total 30 Marks