

R228/204

DUBLIN INSTITUTE OF TECHNOLOGY  
KEVIN STREET, DUBLIN 8

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**BSc in Computer Science**

**Year 2**

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**Supplemental Examination 2002**

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**Web Development**

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**Three (3) Hours**

Attempt **Question 1** and any **THREE** other questions

All questions carry equal marks.

## Section A

### Compulsory

1. Attempt any 5 of parts (a), (b), (c), (d), (e) and (f).

- (a) (i) What are the three different shapes that can be used to define an area in an image map. **(1 mark)**
- (ii) Use a diagram and sample code to show how to define image map areas using *two* of the shapes listed above. **(4 marks)**

- (b) (i) What is a *definition list*? How is one constructed using HTML? **(2 marks)**
- (ii) Give the HTML necessary to produce the lists shown below **(3 marks)**

```
I. Group A
    • Ireland
    • Germany
II. Group B
    • England
    • Sweeden
```

- (c) (i) Explain in detail the difference between XML and HTML. **(3 marks)**
- (ii) How are languages such as XHTML, SGML and WML related to HTML and/or XML. **(2 marks)**
- (d) (i) Although most modern browsers tolerate HTML that is not well-formed, why is it inadvisable to write HTML in this way. **(2 marks)**
- (ii) Write a HTML page which, upon loading, will detect the browser version being used and will inform the user if their browser is older than version 5. **(3 marks)**
- (e) (i) Outline how JavaScript makes use of objects. **(2 marks)**
- (ii) Write a piece of JavaScript code which will allow the user enter their name, and will then display their name in the body of the

document in a red font and uppercase. Note: Your code may not use HTML tags.

**(3 marks)**

(f) (i) Explain using code, the `onsubmit` event.

**(2 marks)**

(ii) Show how two JavaScript events can be used to produce a *rollover image* effect.

**(3 marks)**

## Section B

### Attempt any THREE Questions

2. (a) *Nielsen's Top Ten Mistakes* lists some features that are undesirable for web sites, including the use of frames and the use of *bleeding edge technology*. Discuss five features of web sites that you would consider undesirable if you were given the task of constructing a site for a wide audience.

**(10 marks)**

(b) Identify the seven stages of the Lazar Lifecycle Model. If you were given the task of building a web site for a news provider, similar to `ireland.com`, discuss and justify what you would do at each of the seven stages focussing on the approaches you would take at each stage.

**(15 marks)**

3. (a) Compare and contrast client side processing and server side processing. In your answer you should focus on various different approaches to each including *scripting languages*, *the Common Gateway Interface* and *Java Applets and Mobile Code*.

**(10 marks)**

(b) Write a HTML page including JavaScript which does the following:  
“On a form on the page, a user can enter their age and nationality into text boxes, and can select their decade of birth from a drop down list comprised of 1970s, 1980s and 1990s. Upon clicking submit the details are sent off to the e-mail address [info@exam.com](mailto:info@exam.com), unless their age is below 12, or they have not entered a nationality.”

**(12 marks)**

(c) If a user entered an age of 18, a nationality of Irish and a decade of birth of 1980s, for the form in part (b) above, then what would be the contents of the e-mail received at [info@exam.com](mailto:info@exam.com).

**(3 marks)**

4. (a) Discuss the different ways in which CSS might be used on a web site. Why is it a useful tool for the web developer?  
**(8 marks)**
- (b) Produce a DTD to enforce the following rules for an XML language. *“A college has a president and at least one faculty. A faculty has a director and at least one school. A school has a head, and can have any number of lecturers. A school has a set of courses, each of which has either a course co-ordinator or a course committee. A course-committee is comprised of a set of at least two lecturers.”* Give a sample XML document which conforms to the DTD.  
**(10 marks)**
- (c) Using code and an example, describe fully the role XSL plays in producing web documents.  
**(7 marks)**
5. (a) Give an overview of the history of the Internet and the World-Wide-Web.  
**(5 marks)**
- (b) When a user clicks on a link in a web page, a number of protocols are used at various different layers in order to satisfy the request made. Outline the role played by the following protocols and services in satisfying the request
- HTTP
  - TCP
  - IP
  - DNS
- You are required to explain in detail each of the above protocols. Use diagrams to illustrate your answer.  
**(20 marks)**
6. (a) Explain in detail what *cookies* are and why they are a necessity on the World Wide Web, especially since the advent of electronic commerce.  
**(7 marks)**
- (b) Using sample code and a sample application, show how cookies are used by JavaScript.  
**(9 marks)**
- (c) Cookies are carried in the HTTP request and response headers. Give the full contents of the HTTP headers explaining each line. Explain in detail two different types of HTTP request.  
**(9 marks)**