

S249/417

**DUBLIN INSTITUTE OF TECHNOLOGY
KEVIN STREET, DUBLIN 8.**

BSc Information Systems / Information Technology

Stage 4

SEMESTER 2 EXAMINATIONS 2009

ADVANCED INTERNET DEVELOPMENT

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2 HOURS

ATTEMPT 3 QUESTIONS

ALL QUESTIONS CARRY EQUAL MARKS

1. (a) Provide a brief outline of *three* ways to improve the accessibility of a web page. **(8 marks)**
- (b) With reference to XML, clearly explain the terms *validity* and *well-formedness*. Use examples to help illustrate your answer.
- Briefly compare and contrast *DTD* and *XML Schema* as validation languages. **(10 marks)**
- (c) Illustrate the operation of AJAX applications, and explain clearly, using examples and diagrams, how AJAX compares to, and contrasts with, the standard web model. **(15 marks)**
2. (a) Clearly illustrate and explain the *Model-View-Controller* design pattern. **(8 marks)**
- (b) Discuss how *Model-View-Controller* is used to guide application design using
- *Adobe Flex*, or
 - *Java Server Faces*
- (10 marks)**
- (c) A web development team has been presented with the task of designing the new website for *FlyinAir* – a low fares airline.
- The team must first decide whether to develop a *Rich Internet Application* using *Adobe Flex* and *XML*, or develop a *Web Application* using *Java EE*.
- Present an argument in favour of *one* of the two options, supporting your argument with examples and diagrams where necessary. **(15 marks)**
3. (a) Clearly distinguish between the terms *web-service* and *web-server*. **(8 marks)**
- (b) There is growing interest in technologies such as *SOAP* and *WSDL* as communication protocols and description languages for web-services. Clearly explain the role of both *SOAP* and *WSDL* in web-service communication. **(10 marks)**

- (c) A web development team has been presented with the task of designing the new website for *FlyinAir* – a low fares airline.

The team has decided to expose a number of operations as web-services, to support integration with other websites and travel agents.

The team must first decide whether to expose each of the services as:

- i. A standard HTTP service, serving HTML.
- ii. A standard HTTP service, serving text.
- iii. A web-service, serving XML but not SOAP.
- iv. A SOAP+WSDL service.

Clearly explain each of the *first three* choices above, using examples and diagrams where necessary, and make a supported recommendation of *one* of the *four choices* to the team.

(15 marks)

4. (a) Clearly distinguish between the terms *application-server* and *web-server*. **(8 marks)**

- (b) Explain how *Java EE* provides application developers with an interface to back-end databases, and contrast this with alternative approaches requiring developers to interface with databases using SQL statements. **(10 marks)**

- (c) A web development team has been presented with the task of designing the new website for *FlyinAir* – a low fares airline.

The team is very concerned about security threats to its own application and to its customers.

In particular, they are concerned about

- i. SQL Injections
- ii. Cross Site Scripting

Clearly explain each of the threats above, using examples and diagrams where necessary, and make a supported recommendation to the team regarding avoidance of these problems.

(15 marks)