

**Athlone Institute of Technology**

**School of Engineering**

**Semester 1 Examinations 2016**

**December Session**



**BACHELOR OF ENGINEERING IN SOFTWARE ENGINEERING**

**1 YEAR ADD-ON**

**BACHELOR OF SCIENCE IN SOFTWARE DESIGN**

**(WEB DEVELOPMENT) - YEAR 3**

**SERVER-SIDE WEB DEVELOPMENT**

**External Examiner(s): Dr. Norah Power, Mr. Pádraig Brennon**

**Dr Steven Davy, Mr. Jerh O'Connor**

**Internal Examiner(s): Mr. Earl Gaylard**

**Instructions to candidates:**

Read **all** questions carefully.

All questions carry equal marks.

Answer **Three** out of **Four** questions.

**Time Allowed: 2 hours.**

**No. of pages including cover sheet: 3**

**Q1.**

(a) Briefly outline the format of a HTTP request and HTTP response.

(6 marks)

(b) Outline how Web forms are created using the FORM element in HTML. List 4 Form elements. Write the HTML code for these elements.

(8 marks)

(c) Explain the function of the ‘method’ and ‘action’ attributes in a HTML Form with regards to Servlets.

(2 marks)

(d) What happens when the submit button in a form is pressed? In particular, explain how data is passed from the client to the server.

(4 marks)  
[20 marks]

**Q2.**

a) Write a Servlet that processes the following request:

GET .....?name=earll&address=athlone HTTP/1.1

The Servlet should return the message “Hello <name> from <address>“ to the user.

(6 marks)

(b) Assuming the existence of a model class called ‘User’ with properties ‘name’ and ‘address’. Write a Servlet and JSP page that should return the message Hello <name> from <address> to the user, similar to part (a.) above but this time the Servlet should create a model object and pass it to the view.

(8 marks)

(c) What methods are required by a Servlet Class to process a GET request and a POST request?

(2 marks)

(d) Give an example of how URL mapping is performed in a Servlet.

(4 marks)  
[20 marks]

**Q3.**

- (a) Give an overview of the Model View Controller pattern as applied to Web applications. (8 marks)
- (b) Briefly outline how a Servlet can pass values to a JSP view. Write Java servlet code to pass a reference to a Product object to a view. Write JSP/JSTL to access a property "name" of the Product. (4 marks)
- (c) Outline using pseudo-code a pattern for implementing a DAO as a singleton object in Java that will support the 4 CRUD operations. (8 marks)  
[20 marks]

**Q4.**

- (a) What are hidden data fields? Explain with reference to a FORM that allows a user to add a product to a shopping cart. Write the HTML/JSP for the FORM. (5 marks)
- (b) What is a HttpSession object and how is it used? What is a cookie? Explain how the HttpSession object could be implemented internally in J2EE using cookies. (7 marks)
- (c) Outline two options regarding how the current users' shopping cart can a.) be retrieved when a user logs back in b.) disappear when the user leaves the site. (4 marks)
- (d) Write JSP to conditionally print out the name of the currently logged in user, if the attribute 'user' is set in the current Http session. (If the attribute is not set, nothing is printed out.) Use the <c:if and <c:out tags in the JSTL core library. (4 marks)  
[20 marks]