

**Athlone Institute of Technology**  
**Faculty of Engineering & Informatics**  
**Semester 1 Examinations 2018**  
**December Session**



**Bachelor of Science (Hons) in Software Design (Cloud Computing)**

**Year 3**

**SERVER-SIDE WEB DEVELOPMENT**

**External Examiner(s):** Dr. Steven Davy, Mr. Jerh O'Connor

**Internal Examiner(s):** Dr. Paul Jacob

**Instructions to candidates:** *(make sure you have received the correct paper)*

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: 4**

**Q1**

- (a) What are the three parts of a HTTP message? Give an example of both a HTTP request and a HTTP response.  
(6 marks)
- (b) For a HTML form, when the submit button in a form is pressed, how is form data passed from the client to the server for both a HTTP GET and HTTP POST request.  
(2 marks)
- (c) Outline the structure of a Web Application, including Web browser, Web server, Form Processing Agent and Database. Draw a diagram. Briefly outline what happens during a user registration.  
(6 marks)
- (d) Briefly outline the functionality of Controllers, Model and Views when a Web Application is structured using the MVC architecture. Draw a diagram.  
(6 marks)
- [20/60 marks]**

**Q2**

- (a) It is required for a Servlet to read a name and address from a form and to create a suitable User object. The user object should be passed to a JSP view page which should display the name and address of the User. Write the following
- ⑩ HTML form (4 marks)
  - ⑩ Servlet class (6 marks)
  - ⑩ Domain class User (4 marks)
  - ⑩ JSP view (6 marks)
- [20/60 marks]**

**Q3**

- (a) What is a Data Access Object (DAO) used for? Typically what methods will be defined in a DAO class? Outline a pattern for implementing a DAO as a singleton object in Java using an enum.
- (6 marks)
- (b) Outline a list() method for a UserDao class in Java, that returns a list of all Users. Assume that you have access to a JDBC Connection object for the Database being used.
- (6 marks)
- (c) Write Java (Controller) code to obtain a list of User objects and forward this list to a JSP page.
- (3 marks)
- (d) Assuming a JSP page has access to a list of user objects through the variable "userList", write JSP code to iterate over the list and print out the name and address of each User.

(5 marks)

**[20/60 marks]**

**Q4**

- (a) What are hidden data fields? Outline how hidden data fields can be used to maintain session state.

(4 marks)

- (b) Briefly what is a Cookie? Outline code to show how a Cookie is set and accessed in a Java Servlet?

(6 marks)

- (c) What is a HttpSession object and how is it used in a Java Servlet? Explain how the HttpSession object could be implemented internally in J2EE using cookies.

(7 marks)

- (d) Write JSP to conditionally print out the name of the currently logged in user. If a user is not logged in, nothing should be printed out.

(3 marks)

**[20/60 marks]**