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SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology

Second year, Second Semester Examination -- 2017

HNDIT2411 - Enterprise Architecture

Instructions for Candidates:
Answer only 05 questions.

No. of questions: 06
No. of pages : 04
Time : 03 hours

1. (Total 20 Marks)

- i. What is "Enterprise Computing"? (03 marks)
- ii. Briefly explain levels of the 3-tiered architecture using a suitable diagram. (08 marks)
- iii. What is a J2EE component? Give two examples. (04 marks)
- iv. Briefly explain the term **Web Application Framework**. Give two examples for Java Web Application Frameworks. (05 marks)

2. (Total 20 Marks)

- i. What is concurrency? (03 marks)
- ii. How to implement Threads in java? Explain each method using Java code segments. (08 marks)
- iii. Briefly explain the importance of thread synchronization in Java. (03 marks)
- iv. Java provides two approaches in scheduling threads. What are they? Briefly explain each. (06 marks)

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3.

(Total 20 Marks)

- i. What is a JDBC driver? (02 marks)
- ii. The following Java programme performs a simple query on the **DreamHome** database. It retrieves all the data in the **Product** table and displays them. Fill the blanks with suitable Java codes. (09 marks)

```
import java.sql.*;

public class viewProducts{

static final String url=("jdbc:mysql://localhost/Dreamhome","root","");

String sql = "SELECT product_ID, description, unit FROM Product";

    public static void main(String[] args) {

        try{

            // Load JDBC driver

            a. ....

            // Make connection

            b. ....

            // Create statement

            c. ....

            // Execute query

            d. ....

            // Process the result

            e. ....

            f. ....

            //Ensure connection, statement, result set are closed.

            g. ....
```

h.

i.

```
} catch (SQLException e) {  
    System.out.println(e);  
}  
}
```

iii. The PreparedStatement object allows to execute parameterized queries. Demonstrate above statement with suitable code fragment. [consider that the user supplies the product_ID and wants to see the details of that product] (04 marks)

iv. What is Hibernate? What are the advantages of Hibernate over JDBC?

(05 marks)

4.

(Total 20 Marks)

i. What is an XML parser? Give two (02) examples for Java XML parsers. (04 marks)

ii. Write the XML code that describes the given scenario. (08 marks)

The root element is CATALOG. The root element may contain no CATEGORY element or one CATEGORY element along with any number of BOOK elements. The BOOK element must contain each of the following items AUTHOR, TITLE, PRICE, and PUBLISH_DATE respectively. The BOOK element may contain an attribute called "LANGUAGE" which may have either a value of "Sinhala", "English", or "Tamil". The elements AUTHOR, TITLE, PRICE and PUBLISH_DATE all contain PCDATA which is parsed character data.

iii. Write the Document Type Definition (DTD) file for the above XML document.

(08 marks)



5.

(Total 20 Marks)

- i. What is Servlet container? Name three common tasks performed by Servlet Container? (05 marks)
- ii. Write JSP code segment to create a function to calculate and print the cube of a given number. Use JSP scriptlets. (05 marks)
- iii. Name the four methods of session management in Servlets? (04 marks)
- iv. The following index.html file has been provided to a user to input an integer.

```
<html>
<body>
  <form action="NumServlet" method = "get">
    Enter number: <input type="number" name="value"> <br/>
    <input type="submit" value="search"/>
  </form>
</body>
</html>
```

Write the code for Java Servlet which collects the number from the HTML form and displays the numbers from zero to the number entered by the user. (06 marks)

6.

(Total 20 Marks)

- i. What is an Enterprise Bean? Briefly describe the two categories of Enterprise Beans. (08 marks)
- ii. Write short notes on the followings:
 - a. Web Services
 - b. Service oriented architecture
 - c. SOAP
 - d. Java annotations(12 marks)

