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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)

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## Higher National Diploma in Information Technology

Second Year, Second Semester Examination – 2016

IT4101- Multi-tiered Application Development

Instructions for Candidates:

Answer only **05 Questions**

No. of Questions: 06

No. of Pages : 05

Time: Three (03) hours

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**1 (Total 20 Marks)**

- i. Name four major computing paradigms that have dominated computer science education and software development. (4 marks)
- ii. The major innovation in Service Oriented Computing is the move from the object oriented paradigm to a service oriented paradigm. What is the major difference between Object in Object Orientation and Service in Service Orientation? (2 marks)
- iii. Compare and contrast **Object Oriented Programming** and **Service Oriented Programming** in terms of code shearing and reuse. (4 marks)
- iv. Briefly explain levels of the 3-tiered architecture. (6 marks)
- v. “There are differences between J2EE components and Standard Java classes”. Do you agree with this statement? Justify your answer. (4 marks)

2 (Total 20 Marks)

- i. Name two ways of performing multi-tasking. (2 marks)
- ii. Write functionality of the following methods.

- a. Thread.sleep()
- b. Thread.yield() (2 marks)

iii. Compare HTML and XML (2 marks)

iv. Write characteristics of well-formed xml file (4 marks)

v. Write the DTD for the xml file given below. (6 marks)

```
<?xml version="1.0" encoding = "UTF-8" ?>
<Library>
  <book isbn="0-672-32879-8" edition="2nd">
    <title>JavaScript</title>
    <author>M.Moncur</author>
    <author_email>moncur@gmail.com</author_email>
    <author_url>www.moncur.ac.lk</author_url>
  </book>
  <book isbn="0-672-33575-1" edition="3">
    <title>Java</title>
    <author>R.Cadenhead</author>
    <author_email>cade@gmail.com</author_email>
    <author_url>www.cade.ac.lk</author_url>
  </book>
```

```
<book isbn="0-672-33097-0" edition="4">
<title>HTML and CSS</title>
<author>Melonie and Morrison</author>
<author_email>melonie@gmail.com</author_email>
<author_url>www.melonie.ac.lk</author_url>
</book>
</ Library >
```

- vi. Draw the Tree View of the above XML document (4 marks)

**3 (Total 20 Marks)**

- i. Name two components in JDBC API. (2 marks)
- ii. There are three types of JDBC Statements. Name two. (2 marks)
- iii. How does JDBC handle the data types of Java and database? (2 marks)
- iv. Consider the given scenario. (14 marks)

Assume you are using mysql database. Database name is "ABCcompany". It has four tables. Employee is one of the tables in that database. Employee table structure is given as follow:

```
Employee(eid:string, firstName:String, lastName:String, address:String,
salary:float, telephone:int)
```

Write sample code segments for the following six steps.

- a. Load the JDBC Driver
- b. Establish the database connection
- c. Create a Statement Object
- d. Insert following record to Employee table

“D134”, “Suranga”, “Kavirage”, “no12,Maradana, Colombo10”,  
“1240.00”,0711234567

- e. Display the values of firstName, telephone and salary
- f. Close the connection

**4 (Total 20 Marks)**

- i. What is an Enterprise Application? Give two features of them. (5 marks)
- ii. Write the most appropriate word for each of the following description. (2 marks)

- a. *“WEB –INF directory has a file which contains configuration information about the web app in which it resides. It’s an XML file with a standardized DTD”.*
- b. *“Java programming language class used to extend the capabilities of servers that host applications accessed via a request-response programming model”.*

- iii. What is a servlet container? Give example. (5 marks)
- iv. Write JSP program to accept the input parameters and display full name of employee, who enter his first and last name in following html page.

```
<form action="displayFullName.jsp">  
    First Name: <input type="text" name="fn"> <br>  
    Last Name: <input type="text" name="ln"> <br>  
    <input type="submit">  
</form>
```

(8 marks)

**5 (Total 20 Marks)**

- i. Briefly explain the structure of a SOAP Message (4 marks)
- ii. What is WSDL? (4 marks)
- iii. Briefly discuss the benefits of Web Services (6 marks)
- iv. What is J2EE component? Name 3 Components defined in the Java EE Specification (6 marks)

**6 (Total 20 Marks)**

- i. Briefly explain four Security Threats in program security. (8 marks)
- ii. List six of Security Technologies that can be used against the security threats. (6 marks)
- iii. Briefly explain three of them you mention in 6.ii (6 marks)