

**Session I. Multiple Choice (3 points for each question)**

**Choose one answer only for each question**

1. An aspect of cloud computing that allows developers to create, test, and run their solutions on a cloud platform without having to purchase or configure the underlying hardware and software is known as \_\_\_\_\_.  
a. DaaS  
b. IaaS  
c. SaaS  
d. PaaS
2. A(n) \_\_\_\_\_ is written for mobile devices running a particular mobile phone operating system.  
a. native app  
b. hybrid app  
c. DSS  
d. expert system
3. A(n) \_\_\_\_\_ can connect up to 127 different peripheral devices together with a single connector.  
a. SLR device  
b. USB port  
c. port replicator  
d. docking station
4. \_\_\_\_\_ uses short-range radio signals to enable computers and devices to communicate with each other.  
a. Cellular radio  
b. Bluetooth  
c. Wi-Fi  
d. A hot spot
5. A(n) \_\_\_\_\_ backup method is the only real-time backup, providing very fast recovery of data.  
a. selective  
b. full  
c. incremental  
d. continuous data protection
6. A \_\_\_\_\_ defines how users view the organization of data in a database.  
a. data dictionary  
b. data mart  
c. data model  
d. report writer
7. You register a domain name through \_\_\_\_\_, which is an organization that sells and manages domain names.  
a. a cybersquatter  
b. a registrar  
c. ICANN  
d. an ISP
8. Mobile payment apps use a payment system on phones equipped with a(n) \_\_\_\_\_, which stores data that is transmitted to a contactless terminal and verified as a legitimate sale.  
a. QR chip  
b. EULA  
c. NFC chip  
d. trojan horse
9. A \_\_\_\_\_ is a special series of bits that functions like a ticket.  
a. packet  
b. Bluebug  
c. token  
d. host

10. A(n) \_\_\_\_\_ check tests data in two or more associated fields to ensure that the relationship is logical and their data is in the correct format.
- a. completeness
  - b. consistency
  - c. range
  - d. alphabetic
11. What is the difference between the client-server architecture and the three-tier architecture?
- a. In the three-tier architecture, each tier is a database server.
  - b. In the client-server architecture, each client program has a presentation layer.
  - c. The three-tier application must be distributed over all desktops, but client-server does not.
  - d. The client-server application must reside on a server, but three-tier does not.
12. The *Process* stands for the activity of executing a program, which one is NOT Process state:
- a. program counter
  - b. general purpose registers
  - c. boot loader
  - d. associated memory cells
13. The *Process table* is NOT indicating following state:
- a. waiting time
  - b. ready/waiting
  - c. priority
  - d. memory area assigned to the process
14. When converting an XML document to Java classes, how should you think about XML elements?
- a. Elements are equivalent to classes.
  - b. Elements are like instance variables.
  - c. Elements are similar to superclasses.
  - d. Elements can be instance variables, classes, or methods.
15. What is wrong with the following statement?
- ```
boolean result = statement.execute("SELECT * from emp WHERE empNum = '?'");
```
- a. boolean should be ResultSet
  - b. execute should be executeQuery
  - c. execute should be preparedStatement
  - d. ? should be an integer

**Session II. Problems and Calculations**

1. (a) List all elements (in both binary and decimal) of 3 bits of two's complement (e.g.  $000_{(b)} = 0_{(d)}$ ). (b) what is the value (in both binary and decimal) of the summation of the greatest element and the smallest element? (20 points, 16 points/4 points respectively)
2. A Machine cycle includes fetch, decode, and execute; how many machine cycles will be conduct per second for a 3GHz CPU? (5 points)

3. What is the corresponding value of 10100000 after performing left shift of (a) logic shift, (b) arithmetic shift, (c) rotation. (15 points, 5 points for each)

4. What elements does the data array contain after the following statements? (15 points)

```
double[] values = new double[10];  
for (int i = 0; i < values.length; i++)  
    values[i] = i * i;
```