

Midterm Exam

رقم الشعبة: 1

الرقم التسلسلي:

الاسم:

Instructions: Time **50** minutes. Open book and notes exam. No electronics. Please answer all problems in the space provided and limit your answer to the space provided. **No questions are allowed.**

<Good Luck>

Q1. For the two distributed pervasive systems: home system and wireless sensor network,

[6 marks]

a) State three similarities

There are many similarities, some of them are:

- 1) **Ad-hoc networks**
- 2) **Adapt to change dynamically**
- 3) **Self configuring and self managing**

b) State three differences

There are many differences, some of them are:

- 1) **HN has central server, WSN's nodes are peers and communicate through a tree**
- 2) **HN used for sharing multimedia and resources in a home, WSN are used for surveillance.**
- 3) **HN heterogeneous nodes, WSN homogeneous nodes.**

Q2. Describe how Globule selects and enforces replication policies

[6 marks]

The answer should include descriptions about the following:

- 1) Automatically collecting traces**
- 2) Selecting replication policies through simulation evaluation**
- 3) Enforcing replication policies**

Q3. Describe three modern applications of virtual machines.

[6 marks]

- 1) **Cloud computing and server farms**
- 2) **Software testing**
- 3) **Running legacy software on new platforms.**

Q4. Comment on the performance of remote procedure calls and message-oriented communication.

[6 marks]

- * **RPC is suitable when the client requires executing some code on a server.**
- * **The client usually blocks when calling an RPC.**
- * **RPC is usually slow as it uses the TCP protocol and the networking layers.**
- * **Both client and server must be active during RPC.**

- * **MO is suitable when there is a need to send messages, requests, or replies among distributed nodes.**
- * **The sender needs not to block when sending a message.**
- * **MO can use agile communication middleware and utilize proprietary communication infrastructure as in MPI.**

Q5. In the domain name system, iterative name resolution and recursive name resolution are often used. Describe where it is best to use iterative and where it is best to use recursive name resolution.

[6 marks]

- * Iterative can be used when we don't want to over-load the server. However, the client will often suffer from iterative name resolution requests over long distances that take long time.
- * Often used in the globe layer.

- * Recursive is used when the server does not serve too many clients and can afford recursive name resolution on the client's behave.
- * The server can benefit from caching.
- * Often used in the lower layers.