



VII SEMESTER B.TECH. COMPUTER SCIENCE AND ENGINEERING
END SEMESTER EXAMINATIONS, NOVEMBER 2019

SUBJECT: DISTRIBUTED AND CLOUD COMPUTING [CSE 4102]

REVISED CREDIT SYSTEM
21.11.2019

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL FIVE** questions.
- ❖ Missing data may be suitable assumed.

- 1A.** What is the need of java serialization? Serialize the following CORBA IDL for student structure with an equivalent example of Java class. **4M**

```
struct Student{
    String name;
    String institute;
    Unsigned long graduation year;
};
```

- 1B.** List and explain the different types of transparency in distributed system. **3M**

- 1C.** Explain request-reply protocol and its operation with a neat diagram. **3M**

- 2A.** A client makes remote procedure calls to a server. The client takes 5 milliseconds to compute the arguments for each request, and the server takes 10 milliseconds to process each request. The local operating system processing time for each send or receive operation is 0.5 milliseconds, and the network time to transmit each request or reply message is 3 milliseconds. Marshalling or unmarshalling takes 0.5 milliseconds per message. **4M**

Calculate the time taken by the client to generate and return from two requests:

- (i) if it is single-threaded, and
- (ii) if it has two threads that can make requests concurrently on a single processor.

- 2B.** What is happen – before relation and concurrent events in Lamport's algorithm? Explain in detail, how synchronization is achieved in Lamport's logical clock? **3M**

- 2C.** What is token based and permission based approach in mutual exclusion algorithm? Explain in detail the working of centralized mutual exclusion algorithm with a neat diagram. **3M**

- 3A.** What is Election algorithm? Explain with a necessary diagram to show how election is conducted in a wireless environment to elect a new coordinator. **4M**
- 3B.** What is the difference between primary based and replicated write consistency protocols? Quorum based method belongs to which consistency protocol? With a necessary diagram explain how read – write and write - write conflicts are prevented using quorum based protocol? **3M**
- 3C.** What is the role of Hypervisor in virtualization? Explain in detail about Type 1 and Type 2 Hypervisor with a neat diagram. **3M**
- 4A.** Describe the following modules of Distributed File Service Architecture in detail **4M**
a) Flat File Service
b) Client Module
c) Flat File Service Interface
d) Directory Service Interface
- 4B.** What is virtual machine Live Migration service? Explain the steps involved in Live Migration of virtual machines between two hosts. **3M**
- 4C.** What are the different deployment models available in cloud? Explain with a suitable example. **3M**
- 5A.** What is the role of map reduce in HDFS? Explain the execution overview of Map reduce model with a neat diagram. **4M**
- 5B.** Explain the following components of Hadoop File System Architecture. **3M**
a) Data Nodes and Data Nodes Failure Recovery
b) File Read and Write
c) Image and Journal
- 5C.** What is SLA life cycle? Explain in detail the different phases of SLA life cycle? **3M**
