

Total No. of Questions :8]

SEAT No. :

**P4452**

[Total No. of Pages : 2

**[5255] - 119**

**M.E. (Computer Engineering)**

**DISTRIBUTED SYSTEMS**

**(2008 Course) (510108) (Semester - II)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer any 3 questions from each section.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data, if necessary.*

**SECTION-I**

- Q1)** a) Resources in the World Wide Web and other services are named by URLs. What do the initials URL denote? Give examples of three different sorts of web resources that can be named by URLs. [6]
- b) Describe possible occurrences of each of the main types of security threat (threats to processes, threats to communication channels, denial of service) that might occur in the Internet. [6]
- c) Compare and contrast cloud computing with more traditional client-server computing? What is novel about cloud computing as a concept? [4]
- Q2)** a) What do you mean by physical model of distributed system? Explain following physical models in details- [8]
- i) Baseline physical model.
  - ii) Early distributed model.
- b) Show that Byzantine agreement can be reached for three generals, with one of them faulty, if the generals digitally sign their messages. [8]
- Q3)** a) Why is computer clock synchronization necessary? Describe the design requirements for a system to synchronize the clocks in a distributed system. [8]
- b) Why can't binary data be represented directly in XML, for example, by representing it as Unicode byte values? XML elements can carry strings represented as base 64. Discuss the advantages or disadvantages of using this method to represent binary data. [8]

**P.T.O.**

- Q4)** Write notes on any THREE: **[18]**
- a) Marshalling.
  - b) Distributed objects.
  - c) Process states.
  - d) Peer-to-Peer systems.

### **SECTION-II**

- Q5)** a) Why should UFIDs be unique across all possible file systems? How is uniqueness of UFIDs ensured? **[8]**
- b) Explain release consistency model in detail. **[8]**
- Q6)** a) Draw schematic of File Service Architecture. Explain in detail. **[8]**
- b) Explain design principles for distributed system security. **[8]**
- Q7)** a) Compare RPC call semantics with the semantics of WS-Reliable Messaging: **[8]**
- i) State the entities to which each refers.
  - ii) Compare the differing meanings of the available semantics (for example, at-least-once, at-most-once, exactly-once).
- b) Outline the main difference between TLS and XML security. Explain why XML is particularly suitable for the role it plays, in terms of these differences. **[8]**
- Q8)** Explain any THREE: **[18]**
- a) Cryptography.
  - b) Sun network file system.
  - c) WSDL.
  - d) Authentication mechanisms.

*EEE*