Total No. of Questions : 10] **SEAT No. :**

P2069 **[Total No. of Pages : 3**

[5059]-674
B.E. (Information Technology)
DISTRIBUTED SYSTEM (Semester - II)
(2012 Pattern)

Time : 2 ½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:-

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q1O.***
2) ***Figures to the right side indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data if necessary.***

Q1) a) Explain the concept of Heterogeneity in Distributed System in detail. How it deals with Heterogeneity? **[6]**

b) List the various challenges during the construction of Distributed systems. Describe the challenges while designing of scalable distributed system. **[4]**

OR

Q2) a) What are Sockets? Specify Socket primitives. Draw a diagram specifying TCP stream communication. **[6]**

b) What are various forms of Transparency in Distributed System? Illustrate Network Transparency with an example. **[4]**

Q3) a) What are web services? Explain SOAP and REST based Web Services in a nutshell. **[6]**

b) Explain two main characteristics of distributed event-based systems. **[4]**

OR

P.T.O.

Q4) a) What is Publish-Subscribe system of Communication? **[4]**

b) Explain RMI software with respect to: **[6]**

i) Proxy

ii) Dispatcher

iii) Skeleton

Q5) a) What are NTP's chief design aims and features? An NTP server B receives server A's message at 16:34:23.480 bearing a timestamp 16:34:13.430 and replies to it. A receives the message at 16:34:15.725, bearing B's timestamp 16:34:25.7. Estimate the offset between B and A and the accuracy of the estimate. **[9]**

b) Explain the Chandy-Lamport 'snapshot' algorithm for determining global states of distributed systems. **[7]**

OR

Q6) a) Describe implementation of ordered multicast in a non-overlapping group. **[8]**

b) What do you understand by logical time and logical clocks? Explain Lamport's contribution for it. **[8]**

Q7) a) With a neat labeled diagram of architecture explain communication in NFS. **[8]**

b) Write note on: Global Name Service. **[8]**

OR

Q8) a) Explain following terms with respect to naming entities: **[8]**

i) Names

ii) Identifiers

iii) Addresses

iv) Name Spaces

b) How does the client side caching is used in NFS? Discuss the role of RPC in NFS. **[8]**

Q9) a) Explain process architecture of KERBEROS with security objects namely tickets, authentication and Session key. **[9]**

b) How is a host protected from mobile code using Java sandbox? **[9]**

OR

Q10) a) What do you meant by public-key Cryptography? Explain Digital Signatures with public keys. **[6]**

b) Write short notes on the following (Any 2) : **[12]**

i) Applications of Cryptography and political obstacles

ii) Peer-to-peer middleware systems

iii) Protection and Access Control in Distributed System applications.