SVKM's NMIMS
MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING

Programme: B. Tech (IT) Year: III Semester: V

Academic Year: 2019-20

Subject: Distributed Computing

Date: 12 November 2019

Marks: 70
Time: 10.00 am - 1.00 pm
Durations: 3 (hrs)
No. of Pages: 2

Final Examination (2019-20)

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

1) Question No. 1 is compulsory.
2) Out of remaining questions, attempt any 4 questions.
3) **In all 5 questions to be attempted.**
4) All questions carry equal marks.
5) **Answer to each new question to be started on a fresh page.**
6) **Figures in brackets on the right hand side indicate full marks.**
7) **Assume suitable data if necessary.**

Q.1	(A)	State the three dimensions to define the scalability of the system. What are the main scalability limitations in a distributed system?	(5)
	(B)	Explain the architectural overview of the cluster computing system. What is the horizontal and vertical distribution regarding this system? Justify in brief.	(5)
	(C)	What do you mean by middleware? How does interceptor deal with the remote object invocation?	(4)
Q.2	(A)	What are the general issues in the server design and how they are handled? How to decide whether to design server stateful or stateless?	(7)
	(B)	What do you mean by persistent communication? Explain the working of message-oriented middleware along with different primitives.	(7)
Q.3	(A)	How Remote procedure call is different from the conventional procedure call? Explain the various steps which are taken in RPC. What is the advantage of asynchronous RPC over synchronous RPC?	(7)
	(B)	What are the two approaches for the name resolution in the structured naming? Explain the working of DNS in the context of structured naming.	(7)

Q.4 (A) What happens when the two processes detect the demise of the coordinator simultaneously and both decide to hold an election using the bully algorithm? (7)

(B) Explain the causal consistency model in brief. (7)

Q.5 (A) In the two-phase commit protocol, why can blocking never be completely eliminated, even when the participants elect a new coordinator? (7)

(B) How logical clocks are different from the physical clock? Explain the totally ordered multicasting using Lamport's logical clock. (7)

Q.6 (A) What are the different approaches for authentication to make the communication secure? What can be a drawback of KDC? (7)

(B) Explain the fault tolerance issue in the context of CORBA. (7)

Q.7 (A) Write Short note on- (7)

1. MIME
2. HTTP

(B) Give the architectural overview of NFS in the context of the UNIX system. (7)
