Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019
Course Code: CS407
Course Name: DISTRIBUTED COMPUTING

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 4 marks.   Marks

1	List and explain the three generations of distributed systems.	(4)
2	Differentiate between synchronous and asynchronous Inter Process Communication.	(4)
3	What are the different placement strategies followed in a distributed system.	(4)
4	Explain briefly any four transparency requirement for distributed file system.	(4)
5	Differentiate between forward and backward validation. Which is better?	(4)
6	Mention the factors that evaluate the performance of communication channels.	(4)
7	How does Andrew File System ensure that the cached copies of files are up-to-date?	(4)
8	With an example describe the working of ring based election algorithm.	(4)
9	Why are hierarchic locks required? Explain with example.	(4)
10	In Maekawa's Voting algorithm for all i,j=1,2,....,N ; Pi belongs to set Vi, what problems can arise if the sets Vi are chosen so that $Vi \wedge Vj = \phi$.	(4)

PART B
Answer any two full questions, each carries 9 marks.

11	a)	How can the security of a distributed system be achieved? How can processes and their interactions be secured?	(5)
	b)	Distinguish between mini computer model and work station model.	(4)
12	a)	Consider two communication services for use in asynchronous distributed system. In service A, messages may be lost, duplicated or delayed and check sums apply only to headers. In service B, messages may be lost, delayed or delivered too fast for the recipient to handle them, but those that are delivered arrive with the correct contents.	(9)

Describe the classes of failure exhibited by each service. Classify their failures according to their effects on the properties of validity and integrity. Can service B, be described as a reliable communication service?

13 a) Explain how multimedia services are supported in distributed systems. (4)

b) Summarize the challenges in designing a distributed system. (5)

PART C

Answer any two full questions, each carries 9 marks.

14 a) Explain request reply protocol with an example. (5)

b) Describe the major design issues for RPC (4)

15 a) What are the different failures mentioned in the failure model for UDP datagrams? (4)

b) Briefly explain different types of navigations used for name resolution. (5)

16 a) With appropriate diagram explain the distribution of processes in the Andrew File System (5)

b) Describe the caching mechanism used in NFS (4)

PART D

Answer any two full questions, each carries 12 marks.

17 a) Implement the two methods of locking, namely lock class and lock manager class (6)

b) How the optimistic concurrency control to the serialization of transactions avoids drawbacks of locking (6)

18 a) Why do we make any pair of transactions serially equivalent? Explain serial equivalence with the help of an example. (6)

b) Compare the central server algorithm and ring based algorithm. Which is better and why? (6)

19 a) Explain Ricart and Agrawala's multicast based mutual exclusion algorithm. (6)

b) In a ring topology 7 processes are connected with different ID's as shown: (6)

P20->P5->P10->P18->P3->P16->P9

If process P10 initiates election after how many message passes will the coordinator be elected and known to all the processes. What modification will take place to the election message as it passes through all the processes?

****