Reg No.:_____ **00000CS407121901** Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh semester B.Tech examinations (S), September 2020

Course Code: CS407

Course Name: DISTRIBUTED COMPUTING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 4 marks. Marks

1		In what all aspects distributed systems are better than centralized systems? Give examples of two applications for which distributed systems will be more suitable.	(4)
2		What are the different communicating entities in a distributed system?	(4)
3		Distinguish between synchronous and asynchronous distributed systems.	(4)
4		Describe the architecture of Skype overlay network.	(4)
5		Explain the characteristics of multicasting.	(4)
6		What is the role of Vice and Venus in AFS?	(4)
7		Does ring based mutual exclusion algorithm satisfy the happened before ordering criteria? Illustrate with an example.	(4)
8		What are the criteria for evaluating the performance of a mutual exclusion algorithm?	(4)
9		Explain the basic time stamp ordering rule.	(4)
10		Distinguish between forward and backward validation.	(4)

PART B

Answer any two full questions, each carries 9 marks.

11	a)	Explain processor pool model with diagram.	(3)
	b)	Discuss the challenges in designing a distributed system.	(6)
12	a)	Illustrate the security model for distributed systems.	(6)
	b)	Identify the failure category in the following events and define it: i.Dropped messages ii.Corrupt/duplicate data iii.Delayed transmission	(3)
13	a)	Explain with an example the distributed service as a utility.	(4)
	b)	How can processes and their interactions be secured in a distributed system?	(5)

PART C

Answer any two full questions, each carries 9 marks.

14 a) Explain the request –reply protocol used in client server communication (5)

b) Discuss IP multicast communication. (4)

15 a) What are the different call semantics in RPC? (4)

b) Differentiate between NFS and AFS. (5)

16 a) Discuss the caching mechanisms in NFS. (4)

b) Differentiate non- recursive and recursive navigation used in name service. (5)

PART D

Answer any two full questions, each carries 12 marks.

17 a) How the optimistic concurrency control to the serialization of transactions avoids drawbacks of locking. (6)

b) Explain the use of locks in two phase locking and strict two phase locking. (6)

18 a) Describe the working of bully algorithm with an example. (6)

b) What is a nested transaction? (6)

Consider the following 'transfer' transactions T and U

T: a.withdraw(100); b.deposit(100);

U: c.withdraw(200); b.deposit(200);

Suppose that they are structured as pairs of nested transactions:

*T*1: a.withdraw(4); *T*2: b.deposit(4);

*U*1: c.withdraw(3); *U*2: b.deposit(3);

Compare the number of serially equivalent interleavings of *T*1, *T*2, *U*1 and *U*2 with the number of serially equivalent interleavings of *T* and *U*.

19 Explain Ricart and Agrawala's algorithm for mutual exclusion. Discuss the performance of the algorithm. Explain the working of the algorithm in a scenario of 4 processes P1, P2, P3 and P4 with P2 and P3 requesting to enter into critical section with timestamps 28 and 36 respectively. (12)

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