



M.E DEGREE EXAMINATIONS: JUNE 2017

(Regulation 2015)

Second Semester

COMPUTER SCIENCE AND ENGINEERING

P15CST202 : Parallel and Distributed Systems

COURSE OUTCOMES

CO1: Apply parallel program design techniques.

CO2: Explain how to access remote objects.

CO3: Understand how to work in the distributed environment

CO4: Explain synchronization of distributed events using common global clocks.

CO5: Outline the issues involved in distributed transactions

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Assertion (A): Fine grained parallelism need more communication time CO1 [K₂]
Reason (R): Since the computational blocks are small in size
- a) Both A and R are individually true and R is the correct explanation of A b) Both A and R are individually true but R is not the correct explanation of A
- c) A is true but R is false d) A is false but R is true
2. Select the representation of dependent task CO1 [K₁]
- a) DAG b) Matrix
- b) Task graph d) Array
3. External data representation is CO2 [K₁]
- a) MPI b) IPC
- c) Marshalling d) Applet
4. Match the following: CO3 [K₂]

List I	List II
A. AFS	i. Coordination
B. Applet	ii. File system
C. UTC	iii. Event ordering
D. HB	iv. Code motion

	A	B	C	D
a)	ii	iv	i	iii
b)	ii	i	iv	iii
c)	ii	iii	iv	i
d)	iii	i	iv	ii

5. Assertion (A): In Molithic OS, it is difficult to add new devices. CO3 [K₂]

Reason (R): Since, there are no modular concept.

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|---|---|
| a) Both A and R are Individually true and R is the correct explanation of A | b) Both A and R are Individually true but R is not the correct explanation of A |
| c) A is true but R is false | d) A is false but R is true |

6. Java serialization is for CO3 [K₁]

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|---------------------------------|----------------------------|
| a) External data representation | b) Happend before relation |
| c) Event ordering | d) Clustering |

7. Select the terms related to DNS CO3 [K₁]

1. IP address
2. Address resolution
3. VC
4. Cache refresh
5. Resource record
6. Stub

- | | |
|------------|------------|
| a) 1,2,5 | b) 1,2,3,4 |
| c) 1,2,4,5 | d) 1,2,5,6 |

8. Edge chasing is in CO4 [K₁]

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|---------------------|------------------|
| a) synchronization | b) Deadlock |
| c) Mutual exclusion | d) Logical clock |

9. Select which is not an elements of Quality of Service (QoS) management in Multimedia systems CO4 [K₂]

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|----------------------|------------------------|
| a) QoS negotiation | b) Resource management |
| c) Admission control | d) Resource request |

10. Sequence the following in Passive (primary-backup) replication phases: CO5 [K₁]

1. Coordination
2. Request
3. Response
4. Agreement
5. execution

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|--------------|--------------|
| a) 2-3-4-1-5 | b) 2-1-5-4-3 |
| c) 2-1-4-5-3 | d) 2-3-1-5-4 |

PART B (10 x 2 = 20 Marks)

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|---|-----|-------------------|
| 11. List out any two characteristics of tasks and their interaction patterns. | CO1 | [K ₁] |
| 12. Give any two basic functions in MPI and state their use. | CO1 | [K ₁] |
| 13. What are the issues in IPC. Explain any two. | CO2 | [K ₂] |
| 14. What is Fail stop failure? Give an example | CO2 | [K ₁] |
| 15. What is the function of Stub and skeleton? | CO3 | [K ₂] |
| 16. Define copy on write. | CO3 | [K ₁] |
| 17. What is process address space? List out its content. | CO3 | [K ₂] |
| 18. What is vector clock? Define. | CO4 | [K ₂] |
| 19. Distinguish between flat and nested transaction | CO5 | [K ₂] |
| 20. List five phases of Passive (primary-backup) replication. | CO3 | [K ₂] |

PART C (6 x 5 = 30 Marks)

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| 21. Write a note on mapping techniques for load balancing | CO1 | [K ₂] |
| 22. Explain any three architectural models for distributed systems | CO2 | [K ₁] |
| 23. Write JAVA API related to remote procedure call and explain | CO3 | [K ₂] |
| 24. Explain different types of server threading architecture. | CO3 | [K ₁] |
| 25. How will you synchronize physical clock? | CO4 | [K ₂] |
| 26. Explain traffic shaping algorithms in multimedia systems | CO5 | [K ₃] |

Answer any FOUR Questions

PART D (4 x 10 = 40 Marks)

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|---|-----|-------------------|
| 27. State different types of decomposition. Explain each with an example | CO1 | [K ₂] |
| 28. Discuss about the fundamental models of distributed systems. Give one example for each failure model. | CO2 | [K ₁] |
| 29. Explain Andrew file system and its special features. | CO3 | [K ₁] |
| 30. Write Ricart & Agrawala's and Maekawa's voting algorithm for distributed mutual exclusion. | CO4 | [K ₂] |
| 31. Explain any one concurrency control algorithm. | CO5 | [K ₂] |
