

R18

Code No: 155AB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, July/August - 2023

ADVANCED OPERATING SYSTEMS

(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

- Note:** i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) Explain any three main functions of an Operating System. [2]
- b) “Embedded systems always run on real-time operating system”-Justify this statement. [3]
- c) Write short note on Lamport’s Algorithm. [2]
- d) Analyze the performance of Raymond’s Heuristic Algorithm. [3]
- e) What are issues in deadlock detection in distributed systems? [2]
- f) Discuss Resource allocation graph with respect to deadlock. [3]
- g) What are the various file accessing methods? [2]
- h) Define multi-threading? Explain its benefits. [3]
- i) Write short note on components of Load Distributing. [2]
- j) Define Memory Coherence. [3]

PART – B

(50 Marks)

- 2.a) Write about operating principles of architecture driven and application driven advanced operating systems.
- b) Explain the communication aspects of distributed systems with respect to the geographical area. [5+5]

OR

- 3.a) What are the limitations of Lamport’s logical clocks? How to overcome them with vector clocks?
- b) Write short note on
 - i) Causal ordering of Messages
 - ii) Termination Detection. [5+5]

- 4.a) Explain the properties and performance of Lamport’s Mutual exclusion algorithm.
- b) State and explain Shingal’s Mutual exclusion algorithm. [5+5]

OR

- 5.a) Explain the properties and performance of the Ricart-Agrawala’s Mutual exclusion algorithm.
- b) Explain the working of Suzuki-Kasami’s broadcast algorithm. [5+5]

QA QA QA QA QA QA QA G

- 6.a) Describe Deadlock Handling Strategies in Distributed Systems.
b) Discuss about Control Organizations for Distributed Deadlock Detection. [5+5]

OR

QA QA QA QA QA QA QA G

- 7.a) How to handle naming resolution and availability issues in distributed file systems? Explain.
b) How does deadlock avoidance differ from deadlock prevention? Explain in detail. [5+5]

- 8.a) Describe the architecture and Motivation for multiprocessor Systems.
b) What are the differences between user-level threads and kernel-level threads? [5+5]

OR

QA QA QA QA QA QA QA G

- 9.a) Describe the architecture of distributed file system.
b) Consider the following four processes represented as (Process, Arrival Time, Burst Time) with the length of CPU burst in milliseconds.
{(P1, 0, 10), (P2, 1, 7), (P3, 2, 13), (P4, 3, 11)}.
Using preemptive SJF scheduling:
i) Draw Gantt chart.
ii) Calculate average waiting time. [5+5]

QA QA QA QA QA QA QA G

- 10.a) Describe about issues in a Load Distributed Algorithm.
b) Write about Load Distributing Algorithms, and the Requirements for Load Distributing. [5+5]

OR

- 11.a) Write about the motivations and Architecture of Distributed Shared Memory in detail.
b) Briefly explain about Coherence Protocols. [5+5]

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