

**R16**

Code No: 134BU

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year II Semester Examinations, September/October - 2023

**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) What is a system software? How is it different from an application software? [2]
- b) Draw the layered architecture of an operating system and explain various components of it. [3]
- c) What is meant by context switch? [2]
- d) Distinguish between ordinary pipes and named pipes. [3]
- e) What is demand paging? [2]
- f) Compare LRU page replacement algorithm with optimal page replacement algorithm. [3]
- g) What are magnetic disks? [2]
- h) List and explain various file open access modes. [3]
- i) What are the goals of protection? [2]
- j) What are capability based systems? [3]

**PART – B**

**(50 Marks)**

2. Explain different types of operating system structures. [10]
- OR**
3. What is a system call? What are different types of system calls? Explain them. [10]
- 4.a) Define the term scheduler. Explain briefly about long term, medium term, and short term schedulers with proper diagram.
- b) What is process control block? Explain various fields in it. [5+5]
- OR**
5. How to implement synchronization between the processes using semaphores? Explain with an illustrative example. [10]
- 6.a) What is meant by thrashing? Explain various methods to overcome thrashing.
- b) Explain various frame allocation methods using examples. [5+5]

**OR**

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7. Using FIFO, LRU and optimal page replacement algorithms on following reference string.  
 1,2,3,2,1,2,3,4,5,3,6,7,4,3,5.  
 Compute the number of page faults for the frame size of 3 and 4. [10]

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8. Explain FCFS and SSTF disk scheduling algorithms using examples. [10]

9. Explain about file system mounting and file sharing. [10]

10. Explain banker's algorithm for deadlock avoidance with an example. [10]

**OR**

11. Explain the implementation of access matrix in detail. [10]

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