

Code No: 134BU

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, April - 2018

OPERATING SYSTEMS

(Common to CSE, IT)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- 1.a) What are the different types of operating systems? [2]
- b) How parameters can be passed to system calls? [3]
- c) Define semaphores. [2]
- d) What is the role of dispatcher? [3]
- e) State the purpose of TLB. [2]
- f) Distinguish between logical address and physical address. [3]
- g) Define the following terms with respect to disk I/O – seek time and latency time. [2]
- h) Distinguish between shared and exclusive lock. [3]
- i) Define resource. List some resources that a process might need for its execution. [2]
- j) Describe role-based access control. [3]

PART-B**(50 Marks)**

- 2.a) Explain briefly system calls with examples. [5]
 - b) Explain different operations performed by the operating system. [5]
- OR**
- 3.a) State and explain various types of computer systems. [5]
 - b) Explain if you run the same program twice, what section would be shared in the memory. [5]
- 4.a) Describe dining-philosopher problem? Device an algorithm to solve the problem using semaphores? [5]
 - b) Define process. How many different states a process has? Explain when a process changes the state with a state diagram? [5]

OR

- 5.a) Explain the readers writers problem and its solution using the concept of semaphores. [5]
- b) Explain about Inter Process communication. [5]

6.a) Explain the following:

- i) Paging
- ii) Segmentation.

b) Explain why the “principle of locality” is crucial to the use of virtual memory? What is accomplished by page buffering? [5+5]

OR

7.a) Explain briefly the performance of demand paging with necessary examples.

b) Consider there are three page frames which are initially empty. If the page reference string is 1,2,3,4,2,1,5,3,2,4,6. The number of page faults using the optimal page replacement policy is? [5+5]

8.a) Explain the concept of file sharing. What are the criteria to be followed in systems which implement file sharing?

b) Compare the performance of write operations achieved by a RAID level 5 organization with that achieved by a RAID level 0 organizations? [5+5]

OR

9.a) Discuss the following terms

- i) File system mounting
- ii) Thrashing

b) What is the maximum file size supported by a file system with 16 direct blocks, single, double, triple indirection? The block size is 512 bytes. Disk block numbers can be stored in 4 bytes. [5+5]

10.a) Explain bankers algorithm for deadlock avoidance with an example.

b) Explain about domains of protection. [5+5]

OR

11.a) A system has 3 devices D1, D2 and D3 and 3 processes P1, P2 and P3. P1 is holding D1 and waiting for D3. P2 is holding D2 and waiting for D1. P3 is holding D3 and waiting for D2. Draw resource allocation graph and wait-for graph. Is the system in deadlock state or not? Explain.

b) State and explain the methods involved in recovery from deadlocks. [5+5]