R15

Code No: 823AA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MCA III Semester Examinations, April/May - 2019
OPERATING SYSTEMS

Time: 3hrs   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

5 × 5 Marks = 25

1.a) Distinguish between parallel and distributed systems. [5]
  b) Draw and explain process state diagram. [5]
  c) What are the various steps involved in handling a *page fault*? Explain with a neat diagram. [5]
  d) Explain about file system Mounting. [5]
  e) What are various necessary conditions for deadlock to occur in system? [5]

PART - B

5 × 10 Marks = 50

2.a) What is the difference between spooling and buffering?
  b) What are the issues in OS design and implementation? [5+5]

OR

3. What is system call? What are the various types of system calls? Explain them in detail. [10]

4. Implement real time scheduling algorithms on following data. For two processes P1 and P2, the periods are P1=50, P2=100 and processing times are t1=20, t2=35. [10]

OR

5. What is Critical section problem? Give peterson's solution for critical section problem. [10]

6.a) Consider a logical address space of 64 pages of 1k size, mapped to physical memory of 32 frames.
   i) How many bits are there in the logical address.
   ii) How many bits are there in the physical address.
   iii)What is the size of the page table if each entry in it requires 4 bytes.
  b) Draw a neat diagram showing address translation scheme in paging with TLB. [5+5]

OR

7. Explain memory management through segmentation with paging. [10]

8. Suppose that a disk drive has 500 cylinders, numbered 0 to 499. The read-write head is initially at 34. The queue of pending requests is: 12, 34,121,56,3,287,311,78,97,432,86 Show the total seek time(or seek distance in terms of cylinders) for following disk scheduling method:
   a) FCFS   b) SSTF   c) SCAN   d) C-SCAN   e)LOOK[10]

OR

9. Explain tree structured directories and acyclic graph directories in detail. [10]

10. Discuss various deadlock avoidance strategies. [10]

OR

11.a) What are various methods to recover a system from deadlock state?
   b) What is System Protection? What are the goals of Protection? [5+5]