

Ticket Number:

Code No. : 31505 S

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. (I.T.) III Year I-Semester Supplementary Examinations, May/June-2017**

**Operating Systems**

Time: 3 hours

Max. Marks: 70

*Note: Answer ALL questions in Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

1. Write the sequence of system calls to read data from one file and copy them into another file.
2. What is a dual mode of operation?
3. What is an aging problem? Give the solution.
4. What is the term busy waiting? How do you overcome it?
5. Define thrashing. Discuss the causes for thrashing.
6. What is a TLB? What are its uses?
7. List the key differences between physical and logical formatting of a disk.
8. Discuss the relative advantages and disadvantages of sector sparing and sector slipping.
9. Write about protection domains.
10. What is a virus? How do virus work?

**Part-B (5 × 10 = 50 Marks)**

11. a) Classify the overall operating system functions. Describe these functions with regard to the file and process management. [5]  
b) Describe the differences between symmetric and asymmetric multiprocessing. What are the advantages and disadvantages of multiprocessor systems? [5]
12. a) Consider the following set of processes, with the length of the CPU burst time given in milli seconds. The processes are assumed to have arrived in the order P1, P2, P3, P4 and P5 all at time 0. [6]

Process Name	CPUBurstTime(mill.sec)	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

Answer the following questions.

- i) Draw four gantt charts illustrating the execution of these processes using FCFS, SJF, Priority and RR (TQ = 2) algorithms.
- ii) What is the turnaround time of each process for each of the scheduling algorithms in part (a)?
- iii) What is the waiting time of each process for each of the scheduling algorithms in part (a)?
- b) What is a critical section problem? Explain about two process solution for critical section problem. [4]

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13. a) What is an address binding? Discuss various address binding schemes of their advantages and disadvantages. [4]
- b) Consider the following page reference string: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. For a memory of three frames, find the number of page faults which would occur in the following page replacement algorithms. [6]
- i) FIFO Algorithm                      ii) Optimal Algorithm                      iii) LRU Algorithm.
14. a) Describe the different file allocation techniques with a neat sketch, and also explain the merits and demerits. [4]
- b) Suppose that a disk drive has 2000 cylinders numbered from 0 to 1999. The drive is currently serving a request at cylinder 143 and the previous request was at cylinder 125. The queue of pending requests in FIFO order is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750 and 130. Starting from the current head position, what is the total distance that the disk arm moves to satisfy all the pending requests for each of the following disk scheduling algorithms? [6]
- i) FCFS                      ii) SSTF                      iii) SCAN                      iv) LOOK
15. a) Discuss the goals and principles of protection in a modern computer system. [4]
- b) List and discuss about various standard security attacks. [6]
16. a) Discuss various approaches of inter-process communication. Explain the strengths and weaknesses of these approaches. [5]
- b) What are the different operations of semaphore? Explain two types of semaphore mechanisms in detail. [5]
17. Write short notes on any *two* of the following:
- a) Demand paging. [5]
- b) Free space management. [5]
- c) Worms. [5]

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