Hall Ticket Number:

Code No. : 32005

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

M.C.A. (CBCS) II-Semester Main Examinations, June/July-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. Distinguish between a system call and system program.
2. What is a shell? List any two shells that are supported by GNU/Linux.
3. Define compaction. Under what circumstances it is not possible?
4. List types of directory structure.
5. State the purpose of a semaphore. Give the limitations of semaphores.
6. List the conditions that are necessary for deadlock occurrence.
7. Define the terms:
   a) seek time b) Latency.
8. What are the basic functions of hardware clocks and timers?
9. What is inode? Which Linux system is used to get the inode of a file?
10. Name the CPU scheduling algorithm used by Windows Operating system.

Part-B (5 × 10 = 50 Marks)

11. a) What are the functions of operating systems? [4]
    b) Explain round-robin scheduling algorithm with a suitable example. [6]

12. a) Define page fault. Explain the steps involved in page fault servicing. [6]
    b) Summarize file access methods. [4]

13. a) Let us assume that a system contains four types of resources namely A, B, C and D. The number of instances of each resource type is 3, 14, 12 and 12 respectively. The number instances allocated and maximum instances required are given as follows: [5]

	Allocation	Max
P0	0 0 1 2	0 0 1 2
P1	1 0 0 0	1 7 5 0
P2	1 3 5 4	2 3 5 6
P3	0 6 3 2	0 6 5 2
P4	0 0 1 4	0 6 5 6

    Compute the available resources and need matrix.

    b) What is critical section problem? How many conditions must be satisfied in order to solve critical section problem? Name the conditions. [5]

14. a) What is a bad block? Explain about the bad blocks management techniques. [4]
    b) Discuss the life cycle of an I/O request. [6]

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15. a) List and explain the components of a Linux system. [5]

    b) Discuss about the Windows XP process manager. [5]

16. a) Define a thread. List the benefits of a thread. [4]

    b) How many page faults occur according to FIFO and LRU page replacement algorithm for the following page reference string for 3 page frames? [6]

1,2,3,4,5,3,4,1,6,7,8,9,5,4,5,4,2

17. Write short notes on any ***two*** of the following:

    a) Monitors [5]

    b) RAID [5]

    c) Design principles of Linux. [5]