

315319

25226

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answer with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: 10
- a) List the different states of process.
 - b) State the use of PS command and kill command in Linux.
 - c) Define non-preemptive scheduling.
 - d) State the function of CPU scheduler.
 - e) Define fragmentation with its types.
 - f) Define Virtual memory.
 - g) Describe direct access method with one example.

P.T.O.

- 2. Attempt any THREE of the following: 12**
- a) Differentiate between multi-programmed and multitasking operating system. (Any four points)
 - b) List the types of scheduler and describe function of each scheduler.
 - c) Describe Round-Robin scheduling with example.
 - d) Explain the tree-structured directory with a diagram.
- 3. Attempt any THREE of the following: 12**
- a) List the types of system calls. Give examples of each.
 - b) Describe the benefits of using threads in an operating system.
 - c) Differentiate between paging and segmentation. (Any four points)
 - d) Describe any four file operations.
- 4. Attempt any THREE of the following: 12**
- a) Describe various activities performed by following operating system components:–
 - i) Main memory management.
 - ii) Process management.
 - b) Describe many-to-one multithreading model with suitable diagram.
 - c) Explain any four scheduling criteria.
 - d) Describe Bitmap-free space management technique with example.
 - e) List disadvantages of contiguous file allocation method.
- 5. Attempt any TWO of the following: 12**
- a) Describe any six services of operating system with example.
 - b) Define deadlock prevention. Explain any two methods of deadlock prevention.
 - c) Explain working of Non-contiguous memory management technique-paging with diagram of paging hardware.

6. Attempt any TWO of the following:**12**

- a) Explain Inter Process Communication (IPC). Describe shared memory in detail with their advantages and disadvantages.
- b) Consider the reference string:
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
with frame size 3. Calculate page fault using FIFO and optimal page replacement algorithm.
- c) What is the average turnaround time for the following process using:
- FCFS scheduling algorithm.
 - SJF non-preemptive scheduling algorithm.

Process	Arrival time ms	Burst Time ms
P1	0	6
P2	1	8
P3	2	7
P4	3	3
