315319

12526

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers 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) State any four operating system services.

b) Enlist four process control system calls.

c) Define –

i) Turnaround time

ii) Throughput

d) What are major differences between Linux and windows ?

e) Define thread. Enlist two benefits of thread.

f) List any four file operations. (Any two)

g) Define term page fault.

P.T.O.

Marks

2. Attempt any THREE of the following : **12**

a) Explain real time system. List any two applications.

b) Explain the concept of variable partitioning.

c) Explain free space management techniques –

i) Bitmap

ii) Linked List

d) Describe two level directory structure, with advantages and disadvantages.

3. Attempt any THREE of the following : **12**

a) Draw and explain process state diagram.

b) State any three file types along with their usual extensions. What is the need of file extension ?

c) Differentiate between linked and Indexed file allocation. (Any four points)

d) Explain any two multithreading models with suitable diagram.

4. Attempt any THREE of the following : **12**

a) Describe First Fit, Best Fit, Worst Fit along with example.

b) Describe necessary conditions leading to deadlock.

c) Differentiate between paging and segmentation. (Any four points)

d) Explain process control block with the help of neat diagram.

e) State the meaning of scheduler. Explain any one type of scheduler in detail.

Marks

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

a) Consider the following processes.

Process	Burst time	Priority
01	8	1
02	5	0
03	5	2
04	13	1

Find out average waiting time for the following algorithms:

i) SJF

ii) FCFS

iii) Priority scheduling

(Low number $\rightarrow$ High Priority)

b) What is the output of following Linux commands.

i) sleep 12

ii) Ps - u User1

iii) wait 2535088

c) Define terms deadlock, deadlock avoidance, deadlock prevention. Describe in brief the banker's algorithm for dead lock avoidance.

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

a) What is operating system ? Explain following types of operating system with suitable example of each.

i) Distributed OS

ii) Mobile OS

b) Describe Shortest Remaining Time Next (SRTN) and Round Robin Scheduling algorithms with suitable example.

c) Consider the following page reference string arrival with three page frames 5, 6, 7, 8, 9, 7, 8, 5, 9, 7, 8, 7, 9, 6, 5, 06.

Calculate number of page faults with FIFO (First In First Out) and optimal page replacement algorithms.
