

CBCS SCHEME

15EC553



Fifth Semester B.E. Degree Examination, June/July 2023 Operating System

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain goals and operation of the operating system. (06 Marks)
b. Define :
 - i) Preemption
 - ii) Turnaround time
 - iii) Response time
 - iv) Throughput. (04 Marks)
c. Make use of figure to explain two resource allocation strategies. (06 Marks)

OR

- 2 a. Explain various classes of operating system. (04 Marks)
b. Describe Architectural support required for multiprogramming along with concepts and techniques. (07 Marks)
c. Describe features of distributed operating system. (05 Marks)

Module-2

- 3 a. Explain fundamental states of process and their transistors with state transition diagram. (07 Marks)
b. Define thread. What are the advantages of threads over processes? (04 Marks)
c. Explain the fields of process control block (PCB) (05 Marks)

OR

- 4 a. Explain short term, medium term and long term scheduling in a time shearing system. (08 Marks)
b. Find the average turn around time and weighed turnaround time for the set of processes shown in the table below table Q 4(b), using i) FCFS scheduling policy ii) LCN scheduling policy with time slice $\delta = 1$ sec.

Processes	P1	P2	P3	P4	P5
Admission time	0	2	3	4	8
Service time	3	3	5	2	3

Table Q4(b)

(08 Marks)

Module-3

- 5 a. Distinguish between contiguous and non contiguous memory allocation using a comparison. (04 Marks)
b. Write short notes on : i) Paging ii) Segmentation. (08 Marks)
c. Define :
 - i) Memory fragmentation
 - ii) Memory compaction
 - iii) Reuse of memory areas
 - iv) Swapping. (04 Marks)

OR

- 6 a. Make use of a figure and explain the address translation in a paged virtual memory system. (08 Marks)
- b. Take page reference string and corresponding reference time string. Find out the number of page faults using i) FIFO page replacement policy ii) LRU replacement policy.
Take alloc = 3
Page reference string : 5, 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5
Reference time string : $t_1, t_2, t_3, t_4, t_5, t_6, t_7, t_8, t_9, t_{10}, t_{11}, t_{12}, t_{13}$ (08 Marks)

Module-4

- 7 a. List the facilities provided by file system and IOCS. (04 Marks)
- b. Explain file operations performed by process. (04 Marks)
- c. Describe sequential and direct access file organization. (08 Marks)

OR

- 8 a. Explain various fields of File Control Block (FCB) (06 Marks)
- b. Explain Indexed allocation of disk space. (04 Marks)
- c. Describe File system actions at (i) Open ii) Close. (06 Marks)

Module-5

- 9 a. Explain: i) blocking send ii) Non blocking sends. (03 Marks)
- b. Explain buffering of interprocess messages with the help of figures. (08 Marks)
- c. Write short notes on mailboxes. (05 Marks)

OR

- 10 a. Define deadlock. What are the events related to resource allocation? (05 Marks)
- b. What are the conditions for resource deadlock? (05 Marks)
- c. Describe deadlock handling approaches. (06 Marks)
