

CBCS SCHEME

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15EC553

Fifth Semester B.E. Degree Examination, June/July 2019 Operating Systems

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain operations of OS. (08 Marks)
b. Explain resource allocation techniques. (08 Marks)

OR

- 2 a. Write short notes on various classes of OS. (08 Marks)
b. Explain the architecture support required to have multiprogramming OS and the key concepts and techniques used in multiprogramming OS to improve throughput. (08 Marks)

Module-2

- 3 a. With the help of a state transition diagram explain fundamental state transitions of a process. (08 Marks)
b. Explain fields of process control block. (05 Marks)
c. What are the advantages of threads over process? (03 Marks)

OR

- 4 a. Determine mean turn around and weighted turnaround for the given set of processes using i)SRN ii) LCN scheduling policies

Process	P ₁	P ₂	P ₃	P ₄	P ₅
Admission time	0	2	3	4	8
Service time	3	3	5	2	3

- b. Explain functions of long, medium and short Schedulers in a time sharing system. (08 Marks)

Module-3

- 5 a. Define : i) memory fragmentation ii) memory compaction. (02 Marks)
b. Compare contiguous and noncontiguous memory allocation. (06 Marks)
c. Explain paging and segmentation. (08 Marks)

OR

- 6 a. Define : i) virtual memory ii) page fault iii) page in operation iv) page out operation. (02 Marks)
b. Explain demand loading of a page with the help of figure. (06 Marks)
c. For the following page reference and reference time strings for a process find the number of page faults with alloc_i = 3 using i) FIFO ii) LRU page replacement policies.

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. What are the facilities provided by the file system and the IOCS? (04 Marks)
b. What are the file operations performed by processes. (06 Marks)
c. Explain index sequential file organization. (06 Marks)

OR

- 8 a. List the fields in the File Control Block (FCB). (04 Marks)
b. Explain indexed allocation of disk space. (06 Marks)
c. Explain file system actions at open and close. (06 Marks)

Module-5

- 9 a. Explain : i) direct and indirect naming ii) blocking and non-blocking sends. (04 Marks)
b. Explain buffering of interprocess messages. (06 Marks)
c. Write short notes on mailboxes. (06 Marks)

OR

- 10 a. Define deadlock and explain conditions for a resource deadlock. (04 Marks)
b. Explain deadlock detection algorithm. (06 Marks)
c. Briefly describe deadlock handling approaches. (06 Marks)
