

CBCS SCHEME

Srinivas Institute of Technology
Library, Mangalore

17EC553

USN

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Fifth Semester B.E. Degree Examination, July/August 2021 Operating Systems

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. Explain resource allocation techniques. (10 Marks)
b. Explain various classes of operating system. With an emphasis on prime concern and key concepts used. (10 Marks)
- 2 a. Explain multiprogramming operating system with the help of timing diagram. (10 Marks)
b. List the features of real time operating system. (05 Marks)
c. Explain key concepts used in distributed operating system. (05 Marks)
- 3 a. With the help of state transition diagram, explain process states. (10 Marks)
b. Explain Kernel level and user level threads. (10 Marks)
- 4 a. Apply SRN and LCN scheduling policies to find mean turnaround time \bar{t}_a and mean weighted turnaround time \bar{w} for the processes shown in Table.Q4(a). Use $\delta = 1$ second.

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

Table.Q4(a)

(12 Marks)

b. Explain functions of long term, medium term and short term schedulers in time sharing system. (08 Marks)
- 5 a. Compare contiguous and non contiguous memory allocation. (04 Marks)
b. Explain: (i) Paging (ii) Segmentation (08 Marks)
c. Explain memory fragmentation and clearly explain techniques used to overcome external fragmentation. (08 Marks)
- 6 a. With the help of figures, explain demand paging. (08 Marks)
b. For the following page reference string apply FIFO and LRU page replacement policies to find number of page faults. Use alloc = 3.
Page reference string: 5, 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5
Reference time string: $t_1, t_2, t_3, t_4, t_5, t_6, t_7, t_8, t_9, t_{10}, t_{11}, t_{12}, t_{13}$ (12 Marks)
- 7 a. List File system and IOCS facilities. (04 Marks)
b. List File operations. (06 Marks)
c. Explain direct access file organization. (10 Marks)
- 8 a. Explain various fields of FCB. (10 Marks)
b. Explain Linked allocation of disk space. (10 Marks)
- 9 a. Explain: (i) Direct naming and indirect naming (ii) Blocking and non blocking send (10 Marks)
b. With the help of figure, explain buffering of inter process messages. (10 Marks)
- 10 a. List the events related to resource allocation. (04 Marks)
b. Explain various conditions for resource deadlock. (06 Marks)
c. With examples, describe: (i) Graph model (ii) Matrix model used to determine if set of processes is deadlocked (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, $42+8=50$, will be treated as malpractice.