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17EC553

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Operating System

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define operating system. Explain the key concern and of an operating system. (07 Marks)
- b. Explain the various resource allocation and resource sharing strategies. (08 Marks)
- c. What are the common tasks performed by an operating system? (05 Marks)

OR

- 2 a. Explain briefly, the different classes of operating system with primary concern and key concepts. (10 Marks)
- b. With a neat diagram explain the turnaround time in batch processing system. (06 Marks)
- c. Discuss various computations in an operating system. (04 Marks)

Module-2

- 3 a. Define process, process states and with a state transition diagram explain the state transition for a process. (10 Marks)
- b. Discuss the different fields of the process control block (PCB). (06 Marks)
- c. What are the differences between threads and processes? (04 Marks)

OR

- 4 a. For a given set of processes perform FCFS and SRN scheduling and compare their performance interms of mean turnaround time and weighted turn around. (10 Marks)

Process	P ₁	P ₂	P ₃	P ₄	P ₅
Arrival time	0	2	3	5	9
Service time	3	3	2	5	3

- b. With a neat sketch, explain long, medium and short term schedulers. (06 Marks)
- c. Compare non-preemptive and preemptive scheduling concepts. (04 Marks)

Module-3

- 5 a. Define the following terms with necessary sketches :
 - i) Internal and external fragmentation
 - ii) Paging and segmentation
 - iii) Logical address and physical address.
 - iv) Page and page frame. (12 Marks)
- b. With a neat diagram explain the working of address translation in non-contiguous memory allocation. (08 Marks)

OR

- 6 a. With a neat sketch, explain demand paging preliminaries. (12 Marks)
- b. Consider the page reference string 0, 1, 2, 1, 3, 0, 4, 1, 2, 1, 3, 7, 4, 5, 7. Calculate the page faults. Using FIFO and LRU page replacement policies with a frame size 3. (08 Marks)

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.

Module-4

- 7 a. Explain file system and IOCS with necessary sketches. (08 Marks)
 b. Explain any three allocation methods of disk space for files and mention advantages and disadvantages of each. (12 Marks)

OR

- 8 a. What is a directory? Discuss typical directory entry fields and explain different directory structures. (12 Marks)
 b. Discuss the working of file system action at file close. (08 Marks)

Module-5

- 9 a. Write a note on :
 i) Issues in message passing (12 Marks)
 ii) Direct and indirect naming in message passing
 iii) Blocking and non-blocking sends in message passing. (08 Marks)
 b. Explain mailboxes, give the advantages of mail boxes.

OR

- 10 a. With necessary sketches, explain the different deadlock prevention approaches. (10 Marks)
 b. Using deadlock detection algorithm for the following example of system check, whether the deadlock exist in the system or not. (10 Marks)

	R ₁	R ₂	R ₃
P ₁	2	1	0
P ₂	1	3	1
P ₃	1	1	1
P ₄	1	2	2

Allocated Resources

	R ₁	R ₂	R ₃
P ₁	2	1	3
P ₂	1	4	0
P ₃	0	0	0
P ₄	1	0	2

Requested Resources

R ₁	R ₂	R ₃
0	0	1

Free Resources

R ₁	R ₂	R ₃
5	7	5

Total resources
