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10EC65

Sixth Semester B.E. Degree Examination, Feb./Mar. 2022

Operating Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. What are the goals of an OS? Mention the common tasks performed by an OS and indicate when they are performed. (07 Marks)
- b. Describe the batch processing system along with its turn-around time. (05 Marks)
- c. Briefly explain the benefits and special techniques used in distributed OS. (08 Marks)
- 2 a. What is semantic gap in Monolithic OS structure? How is it addressed in layered OS design? (07 Marks)
- b. Explain the concept of kernel based OS and list the typical functions offered by the kernel. (07 Marks)
- c. With a neat diagram, explain the working of a microkernel based OS. (06 Marks)
- 3 a. What is a process? Explain the contents of a process control block. (06 Marks)
- b. What are the fundamental states of a process and explain the process-state transition diagram. (06 Marks)
- c. Compare threads and processes. Explain kernel level threads. (08 Marks)
- 4 a. Compare contiguous and noncontiguous memory allocation methods. (05 Marks)
- b. Explain the techniques used to perform memory allocation by using a free-list. (10 Marks)
- c. Explain the working of a buddy-system allocator. (05 Marks)

PART – B

- 5 a. Explain the functions of a virtual memory manager. (10 Marks)
- b. Describe demand paging, page replacement and page-sharing in detail. (10 Marks)
- 6 a. Explain the file systems and Input-Output Control Systems (IOCS) in detail with a neat diagram. (10 Marks)
- b. Explain the organization of sequential access and direct access files. (04 Marks)
- c. Explain the file system actions when a file is opened and a file is closed. (06 Marks)
- 7 a. Compute the mean turn-around time and mean weighted turn-around time for following set of processes using FCFS and SRN scheduling.

Processes	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. Explain the process scheduler with a neat schematic diagram. (10 Marks)
- c. Briefly explain real time scheduling. (06 Marks)
- 8 a. Explain the buffering of interprocess messages. (04 Marks)
- b. Write a short note on mail box. (07 Marks)
- c. Describe exceptional conditions on message passing. (07 Marks)
- 8 a. Explain the buffering of interprocess messages. (06 Marks)
- b. Write a short note on mail box. (07 Marks)
- c. Describe exceptional conditions on message passing. (06 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.