2123

B.E. (Electronics and Communication Engineering)
Seventh Semester
EC-711: Operating Systems

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt* <u>*five*</u> *questions in all, including Question No. I which is compulsory and selecting two questions from each Part.*

x-x-x

I	a) Differentiate between distributed and parallel operating systems. b) What is the Critical Section Problem? Discuss in brief. c) What are boot blocks? Briefly discuss their significance. d) What is the purpose of Resource-Allocation Graph in context of deadlocks? Discus in brief. e) List the key features of iOS.	(02) (02) (02) (02) (02)
	PART I	
II	a) Discuss the core functions of an Operating System. How do these functions contribute to the overall efficiency and usability of a computer system? Discuss. b) What are the reasons for providing an environment for Inter Process Communication (IPC)? Discuss the characteristics of shared memory model of IPC.	(05) (05)
III	a) Explain Round Robin scheduling algorithm and discuss its advantages and disadvantages. b) What is contiguous memory allocation? How does contiguous memory allocation work? Discuss.	(05) (05)
IV	a) Consider the following set of processes, with the length of the CPU burst given in milliseconds: | Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2 | The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0. What is the turnaround time and waiting time of each process for FCFS and SJF scheduling algorithms? b) Briefly discuss the concept and working of virtual memory highlighting its advantages and disadvantages.	(05) (05)
	PART II	
V	a) Compare and contrast sequential access and direct access methods. b) Write a note on the need and management of swap-space in an operating system.	(05) (05)
VI	a) Discuss how file systems implement access control and protection for files and directories. b) Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130 Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests using SSTF and SCAN disk-scheduling algorithms?	(05) (05)
VII	a) Write a note on the key features of Android OS. b) What are the steps involved in implementing the Banker's Algorithm? Discuss.	(05) (05)

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