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Future Vision

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Sixth 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

- Explain the role of operating system from different viewpoints. Explain the dual mode of operation of an operating system. (07 Marks)
 - Demonstrate the concept of virtual machine with an example. (05 Marks)
 - Explain the types of multiprocessing system and the types of clustering. (04 Marks)

OR

- Describe the implementation of interprocess communication using shared memory and message passing. (06 Marks)
 - Demonstrate the operations of process creation and process termination in UNIX. (06 Marks)
 - Explain the different states of a process, with a neat diagram. (04 Marks)

Module-2

- Discuss the threading issues that come with multithreaded program. (08 Marks)
 - Illustrate how Reader's-Writer's problem can be solved by using semaphores. (08 Marks)

OR

- Calculate the average waiting time by drawing Gantt chart using FCFS (First Come First Serve), SRTF (Shortest Remaining Time First), RR (Round Robin) [q = 2 ms] algorithms.

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

- Explain the Dining-Philosopher's problem using monitors. (08 Marks)

Module-3

- Determine whether the following system is in safe state by using Banker's algorithm.

Process	Allocation			Maximum			Available		
	A	B	C	A	B	C	A	B	C
P ₀	0	1	0	7	5	3	3	3	2
P ₁	2	0	0	3	2	2			
P ₂	3	0	2	9	0	2			
P ₃	2	1	1	2	2	2			
P ₄	0	0	0	4	3	3			

- If a request for P₁ arrives for (1 0 2), can the request be granted immediately? (09 Marks)
 - Discuss the various approaches used for deadlock recovery. (07 Marks)

OR

- 6 a. Illustrate with example, the internal and external fragmentation problem encountered in continuous memory allocation. (07 Marks)
b. Explain the structure of page table. (09 Marks)

Module-4

- 7 a. Illustrate how demand paging affects systems performance. (08 Marks)
b. Describe the steps in handling a page fault. (08 Marks)

OR

- 8 a. Explain the various types of directory structures. (08 Marks)
b. Describe various file allocation methods. (08 Marks)

Module-5

- 9 a. Explain the access matrix model of implementing protection in operating system. (07 Marks)
b. Explain the following disk scheduling algorithm in brief with examples: (09 Marks)
i) FCFS scheduling
ii) SSTF scheduling
iii) SCAN scheduling
iv) LOOK scheduling

OR

- 10 a. Explain the components of LINUX system with a neat diagram. (08 Marks)
b. Explain the way process is managed in LINUX platform. (08 Marks)
