USN ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚ 15CS64

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

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

OR

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

Module-2

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

OR

4 a. 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

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

Module-3

5 a. 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 P_1 arrives for (1 0 2), can the request be granted immediately? (09 Marks)
  b. 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:
       i)   FCFS scheduling
       ii) SSTF scheduling
       iii) SCAN scheduling
       iv) LOOK scheduling **(09 Marks)**

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)**

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