CBCS SCHEME

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)**

* * * * *