B.C.A . SEM–III (2014 Course) CBCS : SUMMER - 2019

SUBJECT : OPERATING SYSTEMS

Day : Tuesday
Date : 16/04/2019

Time : 02.00 PM TO 05.00 PM
Max. Marks : 100

S-2019-2067

N.B.

1) Attempt **ANY FOUR** questions from section I and ANY TWO questions from Section II.
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Both the sections should be written in the SAME answer book.

SECTION – I

Q.1 a) What are system calls? Explain various categories of system calls with examples. **(10)**
b) Explain the concept of multiprocessing operating systems. **(05)**

Q.2 a) What do you mean by process? Explain various process states. **(10)**
b) Describe various relationships among processes. **(05)**

Q.3 What is page table? Explain the process of conversion of virtual addresses into physical addresses with the help of example. **(15)**

Q.4 What is semaphore? Explain solution to the producer-consumer problem using semaphore. **(15)**

Q.5 Explain the concept of segmentation in detail. **(15)**

Q.6 Explain the following terms: **(15)**
a) Directories
b) File attributes
c) Swapping

Q.7 Write short notes on the following: **(15)**
a) Operating systems view of processes
b) Demand paging
c) Mutual-exclusion

SECTION – II

Q.8 Consider the following case. **(20)**

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P1	0	0	1	2	0	0	1	2	1	5	2	0
P2	1	0	0	0	1	7	5	0				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

Answer the following questions using the Banker's algorithms:
a) What will be the contents of matrix Need?
b) Draw the safe sequence?
c) If the request from P1 arrives for (0, 4, 2, 0), can the request be granted immediately.

Q.9 Suppose the head of moving-head disk with 100 tracks, numbered 0 to 99 and is currently serving a request at track 47 and moving inside, Following is the queue of requests kept in the FIFO order. **(20)**

86, 14, 19, 77, 94, 10, 46, 94, 70, 35, 68

Calculate total time required to move all these tracks using following disk scheduling algorithms. Consider Seek time = 0.40 sec.

a) FCFS b) SSTF

Q.10 Consider the following case. **(20)**

Processes	In time (am)	Burst Time (min.)
P1	10.00	7
P2	10.03	2
P3	10.05	3
P4	10.06	1

Explain the algorithms and Calculate average waiting time and turnaround time in case of : a) FIFO b) SRTN

* * * * *