Roll No. ..... Total Pages : 4

204301

December, 2019

BCA- III SEMESTER

Introduction to Operating System(BCA-17-201)

Time : 3 Hours] [Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART - A

1. (a) List goals of an operating system. (1.5)

(b) List and explain necessary conditions of deadlock. (1.5)

(c) List the essential properties of critical section. (1.5)

(d) Differentiate between long term and short term schedulers. (1.5)

(e) Define directory structure. List various methods for implementing directory structure. (1.5)

(f) Differentiate between physical and logical memory addresses. (1.5)

(g) Explain the difference between MFT and MVT. (1.5)

(h) List the functions of I/O devices. (1.5)

(i) Differentiate between seek time and latency time. (1.5)

(j) Explain purpose of system calls by taking appropriate example. (1.5)

PART - B

2. (a) List various services provided by an operating system. (5)

(b) Explain micro kernel based architecture of an operating system. (10)

3. (a) Explain the State Transition Diagram of a process. (5)

(b) Define safe state. Consider the following snapshot of the system at any time. Check whether the system is in safe state? If yes, find the safe sequence.

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

(10)

4. Define CPU Scheduling. Draw Gantt chart and calculate average Waiting time and turn around time for FCFS, SJF, and RR (time slice=1ms) scheduling algorithms. Processes (p1, p2, p3, p4, p5), with Burst-time (10, 2, 4, 1, 5). All the processes arrived at time 0 in the order (p1, p2, p3, p4, p5). (15)

5. (a) Define a file. List various attributes associated with a file. Explain various file access methods. (5)

(b) Define Disk Scheduling. Find the total head movements for FCFS, SSTF, SCAN and LOOK disk scheduling algorithms by taking the following queue (82, 175, 26, 153, 36, 130, 65, 72, 15), if R/W head starts at cylinder 45 towards cylinder 199. The head cylinders are numbered from 0 to 199. (10)

6. (a) Explain the functions of a device driver. (5)

(b) Differentiate between internal and external fragmentation. (5)

(c) Explain the importance of free space management. (5)

7. Define virtual memory. Explain the basic procedure of page replacement. (15)
