MANAV RACHNA
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MANAV RACHNA UNIVERSITY

(FORMERLY MANAV RACHNA COLLEGE OF ENGINEERING
NAAC ACCREDITED 'A' GRADE INSTITUTION)
Declared as State Private University under section 2f of the UGC act, 1956

DEPARTMENT OF COMPUTER SCIENCE & ENGG

"T3 Examination, May-2019"

Semester: IV
Subject: Operating Systems
Branch: B.Tech CSE
Course Type:Core
Time:3 Hrs
Max.Marks: 100

Date of Exam: 20/05/2019
Subject Code: CSH-211-T
Session: II
Course Nature:Hard
Program: B.Tech
Signature: HOD/Associate HOD:

Note: Each Question is Compulsory. Part A and B carries 10 Marks. Part C and D carries 40 Marks each.

Part – A

Q1. a) Differentiate between
(i) Multi-Programming, Multiuser, and Multi-Tasking OSs. [3]
(ii) Long Term Scheduler, Medium Term Scheduler and Short Term Scheduler [3]
b) Explain briefly about the Lifecycle of a Process. [4]

Part – B

Q2. a) Consider the following scenario of processes: [5]

Process	Arrival time	Execution time
P1	0	5
P2	2	4
P3	3	7
P4	5	6

Draw a Gantt chart for the execution of the processes, showing their start time and end time, using FCFS algorithm. Calculate turnaround timeand waiting time for each process, and average turnaround timeand average waiting time for the system.

b) Five Processes are competing for resources R0, R1, R2, and R3 where (R1, R2, R3, R4) = (6, 4, 4, 2). The maximum claim of these processes and the initial resources allocated to these processes, are given in the following space:

Processes	Max				Alloc			
	R1	R2	R3	R4	R1	R2	R3	R4
P1	3	2	1	1	2	0	1	1
P2	1	2	0	2	1	1	0	0
P3	1	1	2	0	1	1	0	0
P4	3	2	1	0	1	1	1	0
P5	2	1	0	1	0	0	0	1
					5	3	2	2

Does this initial allocation lead to a safe state? What is the Safe String of the Process. [5]

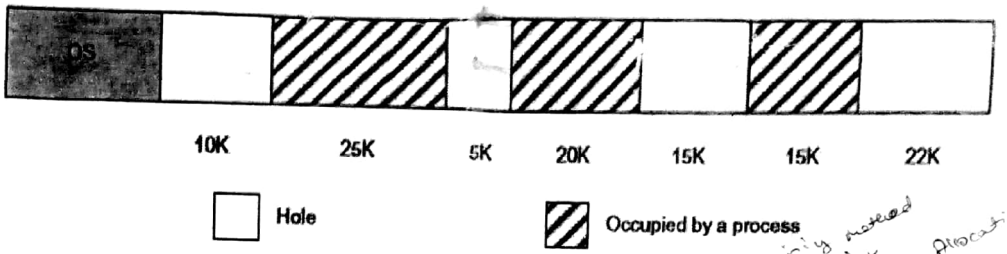
Part – C

Q3. a) Differentiate between [2*2]

(i) Logical Address and Physical Address

(ii) Static and Dynamic Allocation

b) Consider the memory allocation scenario. Allocate memory for additional requests of 4K and 10K (in this order). Compare the memory allocation, using first-fit, best-fit, and worst-fit allocation methods, in terms of internal fragmentation. [6]



c) Explain and Compare different File Allocation Methods. [10]

Q4. a) Explain Non-Contiguous Memory Allocation with Fixed Partitioning and Variable Partitioning. [10]

b) Calculate the number of page faults for the following reference string using with frame size as 3 : [5*2]

String: - 5 0 2 1 0 3 0 2 4 3 0 3 2 1 3 0 1 5

i. Optimal Algorithm

ii. FIFO

Part –D

Q5. a) Consider a disk queue with I/O requests on the following cylinders in their arriving order: 54, 97, 73, 128, 15, 44, 110, 34, 45 The disk head is assumed to be at Cylinder 23. The disk head is moving in the direction of decreasing number of cylindersand disk consist of total 150 cylinders.Calculateand show with diagram the disk head movement using

(i) FCFS-scheduling algorithm. [5]

(ii) SCAN algorithm [5]

b) Write a Short Note on the following: - [5*2]

(i) Spoofing (ii) Authentication

Q6.

a) What is an Access Matrix? Create Access Matrix indicating that in Domain1, File A can be read, whereas in Domain2, it can be read as well as written, and Printer1 can be used. In Domain3, there are access rights of read, write, and execution for File B, and that of print for Printer2 can be used. [5]

b) Create an ACL for the various objects in the above Access Matrix. [5]

c) Write short note on the following [5*2]

(i) Security Attacks (ii) Types of Input Output