Agnel Charities'
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Department of Computer Engineering

Branch: Computer Engineering		**Subject: Operating system**
Examination: SE Sem-IV		**Time:3-hours Max. Marks: 80**
Q1	**MCQ Questions (2 Marks each)**	
	Questions	Options
1.	Logical extension of multiprogramming Operating system	a. Time sharing b. Multitasking c. Simple programming d. Both A and B
2.	Which is not provided by the operating system is____	a. Networking b. User interface c. Error detection d. Program execution
3.	Which table contains the information about each mounted volume.	a. Mount table b. System-wide open-file table c. Per-process open-file table d. All the above
4.	To create a new file application program call _____ ___	a. Basic file system b. Logical file system c. File organization module d. None of the above
5.	In which type of allocation method each file occupies a set of contiguous blocks on the disk	a. Contiguous allocation b. Linked allocation c. Indexed allocation d. Dynamic memory allocation
6.	For large file, when the index itself become too large to be kept in the memory?	a. Index is called b. Index is created for the index file c. Secondary index file is created d. All the above
7.	In _____ policy, when the last track has been visited in one direction, the arm is returned to the opposite end of the disk and the scan begins again.	a. Last In First Out b. Shortest Service Time First c. SCAN d. Circular SCAN
8.	The _____ consists of two key components: the initial startup time, and the time taken to traverse the tracks that have to be crossed once the access arm is up to speed.	a. Seek time b. Rotational Delay c. Access Time d. Transfer Time
9.	A_____ module controls the exchange of data between main memory and an I/O module.	a. Programmed I/O b. Interrupt driven I/O c. Direct Memory Access d. Virtual Memory Access
10.	_____ layer deals with the logical structure of files and with the operations that can be specified by users such as open, close, read.	a. Physical organization b. File System c. Directory management d. Scheduling and control
Q2A	**Attempt ANY TWO QUESTIONS out of THREE (5 marks each)**	
i)	Infer how frequent context switch affect the system performance	
ii)	Summarize various types of schedulers available in OS also infer why short term schedulers invoked very frequently?	
iii)	What is the difference between process and program also illustrate process state transition diagram in detail	
Q2B	**Attempt ANY ONE QUESTION out of TWO Each question is for 10 marks**	
a.	Considering the following processes, calculate the average waiting time and turnaround time **using pre-emptive SJF and Round robin scheduling** Process Queue: P1, P2, P3, P4, P5 Arrival Time: 6,2,8,3,4 Burst Time: 2,5,1,0,4	

b. Considering the following processes, calculate the average waiting time and turnaround time using **Pre-emptive Priority and Non pre-emptive Shortest Job First scheduling.**
Process Queue: P1, P2, P3, P4, P5
Arrival Time: 6,2,8,3,4
Burst Time: 2,5,1,0,4

Q3A **Attempt ANY TWO QUESTIONS out of THREE (5 marks each)**

a. Summaries various methods of inter process communication

b. Outline various methods to prevent the deadlock

c. State the meaning of Semaphore. Compare binary and counting semaphore.

Q3B **Attempt ANY ONE QUESTION out of TWO Each question is for 10 marks**

a. Consider the following snapshot of the system. Using **Banker's Algorithm**, determine whether or not system is in safe state. If yes determine the safe sequence.

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P0	3 0 1 4	5 1 1 7	0 3 0 1
P1	2 2 1 0	3 2 1 1	
P2	3 1 2 1	3 3 2 1	
P3	0 5 1 0	4 6 1 2	
P4	4 2 1 2	6 3 2 5	

b. Consider the following snapshot of the system. Using **Banker's Algorithm**, answer the following questions.

a) How many resource of type A B C D are there?
b) What are the content of Need matrix?
c) Find if system is in safe state? If it is, find the safe sequence.

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P0	6 0 1 2	4 0 0 1	3 2 1 1
P1	1 7 5 0	1 1 0 0	
P2	2 3 5 6	1 2 5 4	
P3	1 6 5 3	0 6 3 3	
P4	1 6 5 6	0 2 1 2	

Q4A **Attempt ANY TWO QUESTIONS out of THREE (5 marks each)**

a. Associate buddy system method with the memory management

b. Summarize the use of Segmentation method to translate logical address to the physical address?

c. Determine how TLB is helpful in memory management

Q4B **Attempt ANY ONE QUESTION out of TWO Each question is for 10 marks**

a. Given Memory partitioning of 100K, 500K, 200K, 300K and 600K in order, how would each of the First-fit, Best-fit and Worst-fit algorithm place the processes of 212K, 417K, 112K, and 426 in order? Further Conclude with appropriate reasons which algorithm makes the most efficient use of memory?

b. Calculate Hit and Miss percentage for the following string using page replacement policies FIFO, LRU, Optimal Page Replacement 2,0,3,0,4,2,3,0,3,2,7,2,0,7,5,0,7,5,7,0.
Further Conclude with appropriate reasons why a particular page replacement algorithm mentioned above provides better memory management performance.