SOME FINAL TEST QUESTIONS – OPERATING SYSTEM – 2ND SEMESTER 2023-2024

1. Consider the following segment table:

Segment	Base	Limit
0	135	66
1	380	300
2	1100	29
3	1400	700

What are the physical addresses for the following logical addresses: 1.30

a. 96
b. 330
c. 65
d. 410

2. Consider the following snapshot of a system:

	Allocation				Max			
	A	B	C	D	A	B	C	D
P_0	3	0	1	4	5	1	1	7
P_1	2	2	1	0	3	2	1	1
P_2	3	1	2	1	3	3	2	1
P_3	0	5	1	0	4	6	1	2
P_4	4	2	1	2	6	3	2	5

Which of the following available value results in an unsafe state? (Using the banker's algorithm)

a. Available = (1,0,0,3)
b. Available = (2,2,2,2)
c. Available = (1,0,0,2)
d. Available = (0,3,0,1)

3. Use FCFS, please indicate the average waiting time of the following Gantt chart?

P1	P2	P3
0 18	24	28
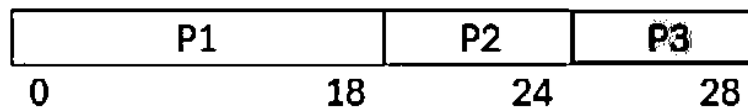
a. 18
b. 15
c. 13
d. 14

4. Use SJF (non-preemtive), please indicate the everage waiting time with:

Process	Arrival Time	Burst Time
P_1	3	7
P_2	0	3
P_3	4	8
P_4	2	2
P_5	6	5

a. 4.4
b. 3
c. 7.4
d. 5

5. Consider a logical address space of four pages of 1024 words each, mapped onto a physical memory of 32 frames. How many bits are there in the logical address?

a. 13bit
b. 10bit
c. 14bit
d. 12bit

6. A system with 5 processes P$_0$ through P$_4$ and three resource types A, B, C have A with 10 instances, B with 5 instances, and C with 7 instances. At time t$_0$, the following snapshot has been taken:

Allocation (process-wise: P$_0$ through P$_4$ top **to** bottom)	MAX (process-wise: P$_0$ through P$_4$ top **to** bottom)
A B C	A B C
0 1 0	7 5 3
2 0 0	3 2 2
3 0 2	9 0 2
2 1 1	2 2 2
0 0 2	4 3 3
Available	
A B C	
3 3 2	

Which sequence of processes leads the system to an safe state?

a. P$_2$ => P$_3$ => P$_1$ => P$_0$ => P$_4$
b. P$_3$ => P$_4$ => P$_1$ => P$_0$ => P$_2$
c. P$_3$ => P$_4$ => P$_0$ => P$_2$ => P$_1$
d. P$_0$ => P$_4$ => P$_1$ => P$_3$ => P$_2$

7. To prevent any resources that have already been allocated from being preempted, we can use the following protocol: "If a process that is holding some resources requests another resource and that resource cannot be allocated to it, then it must release all resources that are currently allocated to it". Which of the following resource is commonly applied to this protocol?

a. Semaphores
b. CPU time
c. Mutex locks
d. Database transactions

8. What action does a computer system take when a page fault occurs?

a. The page is accessed directly from cache
b. The page is resized in memory
c. The page is deleted from memory
d. The page is brought from the backing store into an available page frame in memory

9. Which API is used on Android operating system?

a. POSIX API and Java API
b. Java API
c. Win32 API
d. POSIX API

10. Which of the following is an incorrect reason to use the abort() system call so that the parent can terminate the execution of child processes?

a. Process resources are deallocated by operating system (via wait()).
b. Task assigned to child is no longer required.
c. Child has exceeded allocated resources.
d. The parent is exiting, and the operating systems does not allow a child to continue if its parent terminates.

11. In Rate Monotonic Scheduling, how is period proportional to priority?

a. To vary
b. Direct ratio
c. Equivalent
d. Inverse ratio