Question	Answer
1. Absolute code can be generated for ___. A) compile-time binding B) load-time binding C) execution-time binding D) interrupt binding	A
2. ____ is the method of binding instructions and data to memory performed by most general-purpose operating systems. A) Interrupt binding B) Compile time binding C) Execution time binding D) Load-time binding	C
3. An address generated by a CPU is referred to as a ___. A) physical address B) logical address C) post relocation register address D) Memory-Management Unit (MMU) generated address	B
4. Suppose a program is operating with execution-time binding and	C

the physical address generated is 300. The relocation register is set to 100. What is the corresponding logical address? A) 199 B) 201 C) 200 D) 300	
5. The mapping of a logical address to a physical address is done in hardware by the _____. A) memory-management-unit (MMU) B) memory address register C) relocation register D) dynamic loading register	A
6. In a dynamically linked library, ___.	D) a stub is included in the image for each library-routine reference
7. The ____ binding scheme facilitates swapping. A) interrupt time B) load time C) assembly time D) execution time	D
8. The roll out, roll in variant of swapping is used ___. A) when a	C

backing store is not necessary B) for the round-robin scheduling algorithm C) for priority-based scheduling algorithms D) when the load on the system has temporarily been reduced	
9. ____ is the dynamic storage-allocation algorithm which results in the smallest leftover hole in memory. A) First fit B) Best fit C) Worst fit D) None of the above	B
10. ____ is the dynamic storage-allocation algorithm which results in the largest leftover hole in memory. A) First fit B) Best fit C) Worst fit D) None of the above	C
11. Which of the following is true of compaction?	D) It is possible only if relocation is dynamic and done at execution time.
12. A(n) ___ page table has one page entry for each real page (or	A

frame) of memory. A) inverted B) clustered C) forward-mapped D) virtual	
13. Consider a logical address with a page size of 8 KB. How many bits must be used to represent the page offset in the logical address? A) 10 B) 8 C) 13 D) 12	C
14. Consider a logical address with 18 bits used to represent an entry in a conventional page table. How many entries are in the conventional page table? A) 262144 B) 1024 C) 1048576 D) 18	A
15. Assume a system has a TLB hit ratio of 90%. It requires 15 nanoseconds to access the TLB, and 85 nanoseconds to access main memory. What is the effective memory access time in	A

nanoseconds for this system? A) 108.5 B) 100 C) 22 D) 176.5	
16. Given the logical address 0xAEF9 (in hexadecimal) with a page size of 256 bytes, what is the page number? A) 0xAE B) 0xF9 C) 0xA D) 0x00F9	A
17. Given the logical address 0xAEF9 (in hexadecimal) with a page size of 256 bytes, what is the page offset? A) 0xAE B) 0xF9 C) 0xA D) 0xF900	B
18. Consider a 32-bit address for a two-level paging system with an 8 KB page size. The outer page table has 1024 entries. How many bits are used to represent the second-level page table? A) 10 B) 8 C) 12 D) 9	D
19. With segmentation, a logical address consists of ____. A) segment	A

number and offset B) segment name and offset C) segment number and page number D) segment table and segment number	
20. Which of the following data structures is appropriate for placing into its own segment? A) heap B) kernel code and data C) user code and data D) all of the above	D
21. Assume the value of the base and limit registers are 1200 and 350 respectively. Which of the following addresses is legal? A) 355 B) 1200 C) 1551 D) all of the above	B
22. A(n) _____ matches the process with each entry in the TLB. A) address-space identifier B) process id C) stack D) page number	A
23. Which of the following statements are true with respect to	C) A common approach for handling address

hashed page tables?	spaces larger than 32 bits.
24. Which of the following statements regarding the ARM architecture are false?	D) The micro TLB must be flushed at each context switch.
25. Which of the following is not a reason explaining why mobile devices generally do not support swapping?	B) Small size of mobile applications do not require use of swap space.
1. Which of the following is a benefit of allowing a program that is only partially in memory to execute?	A) Programs can be written to use more memory than is available in physical memory. B) CPU utilization and throughput is increased. C) Less I/O is needed to load or swap each user program into memory. D) All of the above D
2. In systems that support virtual memory, ___.	D) physical memory is separated from logical

	memory.
3. The vfork() system call in UNIX ___.	A) allows the child process to use the address space of the parent
8. Belady's anomaly states that ___.	D) for some page replacement algorithms, the page-fault rate may increase as the number of allocated frames increases
9. Optimal page replacement ___.	B) is used mostly for comparison with other page-replacement schemes
10. In the enhanced second chance algorithm, which of the following ordered pairs represents a page that would be the best choice for replacement? A) (0,0) B) (0,1) C) (1,0) D) (1,1)	A
11. The ____ allocation algorithm allocates available memory to each	C

process according to its size. A) equal B) global C) proportional D) slab	
12. The ___ is the number of entries in the TLB multiplied by the page size. A) TLB cache B) page resolution C) TLB reach D) hit ratio	C
13. _____ allows the parent and child processes to initially share the same pages, but when either process modifies a page, a copy of the shared page is created. A) copy-on-write B) zero-fill-on-demand C) memory-mapped D) virtual memory fork	A
14. ____ is the algorithm implemented on most systems. A) FIFO B) Least frequently used C) Most frequently used D) LRU	D
15. ____ occurs when a process	A

spends more time paging than executing. A) Thrashing B) Memory-mapping C) Demand paging D) Swapping	
16. Windows uses a local page replacement policy ____. A) when a process exceeds its working set minimum B) when a process exceeds its working set maximum C) when the system undergoes automatic working set trimming D) under all circumstances	B
17. Which of the following statements is false with regard to Solaris memory management? A) The speed at which pages are examined (the scanrate) is constant.	A) The speed at which pages are examined (the scanrate) is constant.
18. What size segment will be allocated for a 39 KB request on a system using the Buddy system for	C

kernel memory allocation? A) 39 KB B) 42 KB C) 64 KB D) None of the above	
19. Which of the following statements is false with regard to allocating kernel memory?	C) Because the kernel requests memory of varying sizes, some of which may be quite small, the
20. The ____ is an approximation of a program's locality. A) locality model B) working set C) page fault frequency D) page replacement algorithm	B
21. _____ allows a portion of a virtual address space to be logically associated with a file. A) Memory-mapping B) Shared memory C) Slab allocation D) Locality of reference	A
22. Systems in which memory access times vary significantly are	C

known as _____. A) memory-mapped I/O B) demand-paged memory C) non-uniform memory access D) copy-on-write memory	
23. Which of the following is considered a benefit when using the slab allocator?	D) There is no memory fragmentation.
38. In general, virtual memory decreases the degree of multiprogramming in a system.	False
39. Stack algorithms can never exhibit Belady's anomaly.	True
40. If the page-fault rate is too high, the process may have too many frames.	False
41. The buddy system for allocating kernel memory is very likely to cause fragmentation within the allocated segments.	True
42. On a system with	True

demand-paging, a process will experience a high page fault rate when the process begins execution.	
43. On systems that provide it, vfork() should always be used instead of fork().	False
44. Only a fraction of a process's working set needs to be stored in the TLB.	False
45. Solaris uses both a local and global page replacement policy.	False
46. Windows uses both a local and global page replacement policy.	False
47. A page fault must be preceded by a TLB miss.	True
48. Non-uniform memory access has little effect on the performance of a virtual memory system.	False
49. In Linux, a slab may only be either full or empty.	False
40. A relocation register is used to	False

check for invalid memory addresses generated by a CPU.	
41. Reentrant code cannot be shared.	False
42. There is a 1:1 correspondence between the number of entries in the TLB and the number of entries in the page table.	False
43. Hierarchical page tables are appropriate for 64-bit architectures.	False
43. The ARM architecture uses both single-level and two-level paging.	True
44. Fragmentation does not occur in a paging system.	False
45. Hashed page tables are particularly useful for processes with sparse address spaces.	True
46. Inverted page tables require each process to have its own page table.	False

47. Without a mechanism such as an address-space identifier, the TLB must be flushed during a context switch.	True
48. A 32-bit logical address with 8 KB page size will have 1,000,000 entries in a conventional page table.	False
49. Hashed page tables are commonly used when handling addresses larger than 32 bits.	True
50. The x86-64 bit architecture only uses 48 of the 64 possible bits for representing virtual address space.	True
51. Mobile operating systems typically support swapping.	False