1. \_\_\_\_\_\_\_\_\_ refers to disk arrays with striping at the level of blocks but without any redundancy, while \_\_\_\_\_\_\_\_\_\_ refers to disk mirroring

|  |  |  |
| --- | --- | --- |
|  |  | RAID level 1, RAID level 0 |
|  |  | RAID level 0, RAID level 1 |
|  |  | RAID level 3, RAID level 6 |
|  |  | RAID level 5, RAID level 4 |

**4 points**

**QUESTION 2**

1. On a Linux machine, there is a file that has rw-r--r--permissions. It means:

|  |  |  |
| --- | --- | --- |
|  |  | Group: read  User: read and write  Others: read |
|  |  | Group: read and write  User:  read  Others: read |
|  |  | Group: read and write  User:  read  Others: read and write |
|  |  | Group: read  User:  read and write  Others: execute |

**4 points**

**QUESTION 3**

1. non-preemptive scheduling means a running process can be interrupted by any other process.

 True

 False

**4 points**

**QUESTION 4**

1. An application consists of two parts; 20% serials and 80% parallel. what is the speedup for 2 cores?



**4 points**

**QUESTION 5**

1. **Breach of integrity** means unauthorized destruction of data

 True

 False

**4 points**

**QUESTION 6**

1. A user who creates an object can define an access column for that object

 True

 False

**4 points**

**QUESTION 7**

1. Among the options of  Implementation of VMMs; \_\_\_\_\_\_\_\_\_\_ which is a hardware-based solutions that provide support for virtual machine creation and management via firmware, and \_\_\_\_\_\_\_\_\_  which is an applications that run on standard operating systems but provide VMM features to guest operating systems

|  |  |  |
| --- | --- | --- |
|  |  | Type 1 hypervisors, Type 0 hypervisors |
|  |  | Type 2 hypervisors, Type 0 hypervisors |
|  |  | Type 2 hypervisors, Type 1 hypervisors |
|  |  | Type 0 hypervisors,  Type 2 hypervisors |

**4 points**

**QUESTION 8**

1. breach of integrity means unauthorized modification of data, while breach of confidentiality means unauthorized reading of data

 True

 False

**4 points**

**QUESTION 9**

1. vfork() creates a new process without copying the page tables of the parent process. While fork() creates a new process by copying the page tables of the parent process.

 True

 False

**4 points**

**QUESTION 10**

1. One of the Deadlock Characterization conditions is Hold and wait. It means a resource can be released only voluntarily by the process holding it, after that process has completed its task

 True

 False

**4 points**

**QUESTION 11**

1. \_\_\_\_\_\_\_\_\_ means allocate the largest hole; must also search entire list produces the largest leftover hole. While \_\_\_\_\_\_\_\_\_  means allocate the smallest hole that is big enough; must search entire list, unless ordered by size produces the smallest leftover hole.

|  |  |  |
| --- | --- | --- |
|  |  | Worst-fit, First-Fit |
|  |  | Best-fit, Worst-fit |
|  |  | Best-fit, First-Fit |
|  |  | Worst-fit, Best-fit |

**4 points**

**QUESTION 12**

1. Frames are fixed-sized blocks located on the physical memory, while Pages are fixed-sized blocks located on the logical memory

 True

 False

**4 points**

**QUESTION 13**

1. \_\_\_\_\_\_\_\_\_\_ means transfer data by transferring the entire file, or transferring only those portions of the file necessary for the immediate task.

|  |  |  |
| --- | --- | --- |
|  |  | Data splitting |
|  |  | Data Migration |
|  |  | Data pushing |
|  |  | Data pulling |

**4 points**

**QUESTION 14**

1. An application consists of two parts; 20% serials and 80% parallel. What is the speedup  for 8 cores?



**4 points**

**QUESTION 15**

1. To prevent deadlock, Mutual Exclusion is NOT required for sharable resources (e.g., read-only files). It be must hold for non-sharable resources.

 True

 False

**4 points**

**QUESTION 16**

1. The communication network is partitioned into the following multiple layers, EXCEPT ONE:

|  |  |  |
| --- | --- | --- |
|  |  | Session layer |
|  |  | Disk layer |
|  |  | Network layer |
|  |  | Physical layer |

**4 points**

**QUESTION 17**

1. If the CPU simply waits for the next input character, we call this\_\_\_\_\_\_\_\_\_. In this method, the CPU continuously checks the I/O device in a program loop, waiting for the next input

|  |  |  |
| --- | --- | --- |
|  |  | Demand a page |
|  |  | Interrupts |
|  |  | Polled I/O |
|  |  | Reference a page |

**4 points**

**QUESTION 18**

1. The following two threads are running simultaneously. According to the piece of the code, there is a deadlock situation

| **Time (msec)** | **Thread 1** | **Thread 2** |
| --- | --- | --- |
| 1    2    3    4 | pthread\_mutex\_lock(&m1);    pthread\_mutex\_lock(&m2);    pthread\_mutex\_unlock(&m2);    pthread\_mutex\_unlock(&m1); | pthread\_mutex\_lock(&m2);    pthread\_mutex\_lock(&m1);    pthread\_mutex\_unlock(&m1);    pthread\_mutex\_unlock(&m2); |

1.  True
2.  False

**4 points**

**QUESTION 19**

1. Consider the following set of processes, with the length of the CPU burst given in milliseconds:

|  |  |  |
| --- | --- | --- |
| Process | Arrival time | Burst Time |
| P1 | 0 | 8 |
| P2 | 1 | 3 |
| P3 | 2 | 1 |
| P4 | 3 | 9 |

 Using Gantt charts, the average waiting time for First- Come, First-Served (FCFS) is what?



**4 points**

**QUESTION 20**

1. the base register contains the starting physical address where the segments reside in memory. limit register specifies the length of the segment.

 True

 False

**4 points**

**QUESTION 21**

1. Linux uses the same internal representation for processes and threads; a thread is simply a **new process** that happens to share the same address space as its parent. Both are called **tasks** by Linux

 True

 False

**4 points**

**QUESTION 22**

1. The parity is computed by applying XNOR a bit from drive 1 with a bit from drive 2 and storing the result on drive 3

 True

 False

**4 points**

**QUESTION 23**

1. \_\_\_\_\_\_\_\_\_ means a process is spending more time in paging rather than execution

|  |  |  |
| --- | --- | --- |
|  |  | Lazy swapper |
|  |  | Thrashing |
|  |  | Local replacement |
|  |  | page fault |

**4 points**

**QUESTION 24**

1. All the following are options to remove the access right of a domain to an object, except

|  |  |  |
| --- | --- | --- |
|  |  | temporary vs. permanent |
|  |  | partial vs. total |
|  |  | immediate vs. delayed |
|  |  | local vs. global |

**4 points**

**QUESTION 25**

1. The \_\_\_\_\_\_\_\_\_ value changes when the page gets referenced. While, the \_\_\_\_\_\_\_\_\_ value changed

|  |  |  |
| --- | --- | --- |
|  |  | valid bit, reference bit |
|  |  | invalid bit, dirty bit |
|  |  | dirty bit, reference bit |
|  |  | reference bit, dirty bit |