**1.a: (Total Marks 2)**  
**Correct answer:** Volatile memory is the memory that can keep the information only during the time it is powered up. In other words, volatile memory requires power to maintain the information. Volatile memory is typically faster than nonvolatile memory, so typically when operating on the data it's faster to do it on volatile memory.

**Partial Marks:** Based on the correctness of the answer.

**1.b: (Total Marks 3)**

**Correct answer:**<https://www.tutorialspoint.com/difference-between-microkernel-and-monolithic-kernel>

**Partial Marks:** Based on the correctness of the answer.

**1.c:**  **(Total Marks 3) 3 Marks for 6 correct outputs.  
Correct Outputs:**  
child process executing  
value of a[0]: 10  
value of a[1]: 7  
parent process executing  
value of a[0]: 8  
value of a[1]: 9

**Partial Marks:** Based on the number of correct outputs.

**2.a: (Total Marks 5)**  
**Correct grant chart and correct waiting and turnaround time:** 3+1+1

**Correct waiting and turnaround time on incorrect grant chart:**grant chart marks will depend on the correctness of the simulation+0.5+0.5

**Incorrect waiting and turnaround time on incorrect grant chart:** grant chart marks will depend on the correctness of the simulation+0+0  
**2.b: (Total Marks 4)**

**Correct grant chart and correct waiting and turnaround time:** 2+1+1

**Correct waiting and turnaround time on incorrect grant chart:**grant chart marks will depend on the correctness of the simulation+0.5+0.5

**Incorrect waiting and turnaround time on incorrect grant chart:** grant chart marks will depend on the correctness of the simulation+0+0

**2.c: (Total Marks 1)**

**Correct Answer:**1

**Incorrect Answer:** 0 (No partials)

**3.a: (Total Marks 2)**  
**Correct answer for 3 cores:** .75

**Correct answer for 5 cores:** .75

**Correct answer of performance change:** .5

**3.b: (Total Marks 3)**  
**Correct answer:** 3

**Partial marks:** Based on the correctness of the answer.