1: Internal fragmentation is when an excess amount of memory is assigned to a process, but not all of it ends up getting used. This wastes space and makes it so the empty locations cannot be used by another process. External fragmentation is when there is enough space in memory to hold a process but it still cannot be ran. This is due to the memory segments not being contiguous.

2: First-fit:

1. 100 k left empty
2. 212K data
3. 112K data
4. 300K left Empty
5. 426K data

Best fit:

1. 100K left Empty
2. 417K data
3. 112K data
4. 212K Data
5. 426K Data

Worst-fit:

1. 100K Empty
2. 417K Data
3. EMPTY
4. 112K Data
5. 212K Data

Best fit makes the most efficient use of memory here.

3: It will take double the time so 400 nanoseconds as first the page table has to be looked up and then the location in memory has to be looked up.

B: If 75% of the time the data is found in the TLB, then 75% of the time the lookup only needs 1 step. Therefore 75% of the time it takes 10ms for TLB Lookup and then 200ms for memory access which means it takes 210 ns. The other 25% of the time, we then have to add on the miss time so it would be 410ms. Averaging these together by the amount of time they occur, we get .75\*210 +.25\*410 which equals 260 ns for an average memory reference time.

4: