Computer Architecture
Assignment 10

Question 1:
Write through policies: whenever we write to caches we also write to its lower level too.
Importance: When using a parallel machine, Each core has its own L1 cache, So it is important that whatever we write in caches should also be reflected in lower level. So that processor maintains its functional correctness.

Write back policies: We don't write to lower levels whenever we write. Whenever we write we set the modified bit. This way we only need to write to lower levels on time of eviction.
Importance: when performing sequence execution, having to change some variable many times. It doesn't make sense to write through every time value changes, what we can instead do is only change it on L1 cache and only write to lower levels if the block is going to evict. This way we have much lower traffic between cache and cache and between cache and main memory.

Question 2:
Yes, I think LRU (Least Recently Used) policy is a good replacement policy. It tries to manage the temporal locality as it is taking frequency of its use as a parameter to decide which block to evict. We as name suggest we replace the block that has been accessed the least number of times in the recent past.
True LRU requires saving a hefty timestamp every way. This makes it difficult to implement an efficient true LRU. So, we implement Pseudo LRU, which solves the problem of hefty timestamps.