1. Explain **Pages** and **Frames**.  
A page refers to a section of a process in virtual memory,  
A frame refers to a section physical/real memory.

2. Talk about the difference between **Real Memory** and **Virtual Memory**.  
Real memory refers to RAM. It uses absolute addressing and is divided into frames.  
Virtual memory is stored on the hard drive. It uses relative addressing and is divided into pages.

3. What are the advantage and drawbacks of **Virtual Memory with paging**?  
Advantages: No external fragmentation, No need for address rewriting when loading, You can load specific pages when needed, More processes executing simultaneously, Process size in virtual memory can exceed the total physical memory  
  
Drawbacks: Internal fragmentation, needs page table

4. Which kind of fragmentation (external or internal) will be influenced by the **page size**? What will happen if the page size goes smaller? What is the drawback(s) of small page size?   
Internal fragmentation.  
Small page size will decrease internal fragmentation but results in a larger page table and more overhead.

5. What is the **page fault**?  
When you try to access a page that is not loaded into physical memory.

6. Why we need fetch policy (What is determined by **fetch policy**)? Briefly list two types of fetch policy.  
A fetch policy defines when you load pages and which pages you load into physical memory.   
- Demand Paging: load only when trying to access  
- Pre-paging: load current and next few

7. What is **replacement policy**? What are the advantages and drawbacks of 4 replacement algorithms? (Optimal, LRU, FIFO, Clock)  
Replacement Policy: determines which pages to replace/ unload  
Optimal:  
- Advantage: Best Performance  
- Drawbacks: Just a concept, used a reference for other algorithms   
LRU:  
- Advantage: Great Performance  
- Drawback: Hard to implement  
FIFO:  
- Advantage: Easy to implement  
- Drawback: Bad performance  
  
  
  
Clock:  
- Advantage: Easy to implement, Good performance usually  
- Drawback: Worst case has bad performance, some overhead

8. What is needed to determine the page sequence in Optimal page replacement policy?  
It needs to know the order of processes first.

9. Compare and contrast Virtual Memory with **Paging** and **Segmentation**. What are respective advantages and drawbacks?  
Paging: Size of page is fixed  
- Advantages: No external fragmentation, More processes executing simultaneously, Process size in virtual memory can exceed the total physical memory  
- Drawbacks: Internal fragmentation, hidden from programmers  
  
Segmentation: Size of segment is variable,   
- Advantages: Interactive for programmers, No internal Fragmentation, specify permissions for different segments  
- Drawbacks: External Fragmentation, Limits multiple processes running simultaneously