**Introduction to Operating Systems**

**COP 4600-001**

Name and ID \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Worksheet #11**

Q1. Consider a logical address space of 20 pages with 210 words per page, mapped onto a physical memory of 16 frames.

1. How many bits are required in the logical address space?
2. How many bits are required in the physical address space?

Q2. Assuming a 211 page size, what are the page numbers and offsets for the following address references (provided as decimal numbers):

1. 3454
2. 2014
3. 20572
4. 376
5. 30000
6. 16389

Q3. Consider the following segment table:

|  |  |  |
| --- | --- | --- |
| Segment | Base | Length |
| 0 | 219 | 589 |
| 1 | 2000 | 600 |
| 2 | 1000 | 250 |
| 3 | 1250 | 650 |
| 6 | 3000 | 1200 |

What are the physical addresses for the following logical addresses?

1. 1, 450
2. 0, 367
3. 3, 400
4. 2, 300
5. 6, 1111

Q4. The physical addresses generated by a process can be resolved at compile time, or at load time, or at run time. Which one will best fit each of the memory management schemes named below? Also indicate the type of fragmentation caused by each of the schemes.

1. Multiple Variable Partitions with Compaction

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1. Multiple Fixed Partitions with a different scheduler for each partition

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1. Multiple Variable Partitions without Compaction

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