

6. (16 pts.) What is the complexity of the following code segments assuming the function `spam(n)` is $O(n^2)$ and `eggs(n)` is $O(n \log n)$.

a)

```
for i in range(n):
    for j in range(n):
        sum = sum + i*j
```

b)

```
for i in range(n):
    for j in range(n):
        eggs(i*j)
```

c)

```
print spam(n) + eggs(n)
```

d)

```
print spam(n) * eggs(n)
```

7. (12 pts.) If the list `[0, 5, 9, 11, 14, 18, 19, 21, 33, 17, 27]` is the internal Python representation for a Binary Heap Tree, then in the space below

- a) draw the original binary heap tree.
- b) draw the final tree after 12 is added.
- c) draw the final tree after 5 is deleted.

Be sure to clearly identify each answer. (Hint: the zero is a space holder and not part of the heap.)

8. (8 pts.) Give Python code to sort a Python list using Bubble Sort.

9. (8 pts.) Give Python code to do a binary search of a sorted Python list.