Chapter -17

Q.1

(a) Aggregate Method:

```
Initially table with capacity = 1
for i = 1 to n:
    if table is full
        network = create new table with size
                  2 current size
        copy elements from old table to
                  new table
        table = new table
        insert elements in into table
```

let $K = \log(n+1) - 1$

Total cost $= O(n) \times K$

$O(n \log n)$

Cost per insertion is $O(\log n)$

Total time is $O(n) \log(n+1)$

(b) Accounting Method:

```
Initialize table with capacity = 1
for i = 1 to n:
    if table is full
    new tall = create new table
               with size current size
```

copy element from old table to new table
table = newtable
insert, element i into T
initialize charges = 0
initialize credits = 0
for i = 1 to n:
charges i = 2
if table doubled in size from n to 2n
credits i = m
Total charge = 2n = O(n)
Total credits = m + 2m + ... + n/2 * m = O(n)
cost per insertion = Total/n
O(n/n)
O(1)

Runtime per insertion = O(1)

Total time = O(n)