2a. f = Θ(g) means there exists n­0,c1, c2 > 0 such that for all n > n0, c1g(n) <= |f(n)| <= c2 g(n).

Let’s call g(n) = ag(n) and f(n) = g(n). We will have:

c1ag(n) <= |g(n)| <= c2ag(n).

Now let’s call d1 = c1a and d2 = c2a

d1g(n) <= |g(n)| <= d2g(n) is in the same form as the definition of f = Θ(g) so this is TRUE.

2b. t(n) є O(g(n)) implies that |f(n)| <= cg(n) and t(n) є Ω(g(n)) implies that cg(n) <= |f(n)|. Since f(n) must either fall within one of those two cases, or be equivalent to both, then this assertion is TRUE.