

1. (a) State *formally* what is meant by each of:

$f(n)$ is $O(g(n))$

[3 marks]

$f(n)$ is $\Omega(g(n))$

[2 marks]

$f(n)$ is $\theta(g(n))$

[2 marks]

- (b) Determine whether each of the following statements is true or false, justifying your answers:

i. 2 is $O(1)$

ii. $n^2 \log(n)$ is $O(n^3)$

iii. n^2 is $\Omega(n \log(n))$

[6 marks]