**TRW222**

**TEST 3 Asymptotic Analysis**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student No\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| 1 Gee die definisie van die asimptotiese bogrens O(g(n)) (5) | 1. *Give the definition of the asymptotic upper bound O(g(n)) (5)* |
| ***Definition of Big Oh***  Consider a function f(n) that is non-negative for all inters n>=0. We say that “f(n) is big oh g(n)” which we write f(n) = O(g(n)), if there exists an integer n0 and a constant c> 0 so that for all integers n>=n0,  f(n) <= c g(n)  1 mark for non-negative; 1 for c >0 and n>n0; 1 mark for f(n)=O(g(n)); 1 for f(n) <= c g(n) 1 overall | |

|  |  |
| --- | --- |
| 1. Ontleed die volgende programdeel met Groot O (O(n)) (10) | Analyse the following program segment with Big Oh (O(n)) (10) |
| public class Question1.3  {  public static int numbers (int n)   1. { 2. int prod = 1; 3. for (int i=1; i<n; i++ ) 4. { 5. for ( int j=0; j<i; ++j) 6. prod \*=j; 7. } 8. return prod; 9. } 10. } | |
| 5 O(1) | *8b* O(n2) |
| *6a* O(1) | *8c* O(n2) |
| *6b* O(n) | *9* O(n2) |
| 6c O(n) | 11 O(1) |
| 8a O(n) | TOTAAL: O(n2) |

|  |  |
| --- | --- |
| 4. Gee die reël van die asimptotiese ontleding van ŉ JAVA FOR-STRUKTUUR (10) | 1. *Dive the definition the asymptotic analysis of a JAVA FOR-STRUCTURE (10)* |
| *2 marks for for-statement,1 mark for max, 1 mark each for every item in max list, additional 1 for b part( +1) 1 mark for explanation of T and 1 mark for I’s explanation* | |