Question 1 [1 Marks]

```
What is the time complexity of fun()?
  int fun(int n)
    int count = 0;
for (int i = 0; i < n; i++)
  for (int j = i; j > 0; j--)
      count = count + 1;
     return count;
```



Question 2 [1 Marks]

 $Let \ w(n) \ and \ A(n) \ denote \ respectively, the worst \ case \ and \ average \ case \ running \ time \ of \ an \ algorithm \ executed \ on \ an input \ of \ size \ n.$ ALWAYS TRUE? (GATE CS 2012) (A) $A(n) = \Omega(W(n))$ (B) $A(n) = \Theta(W(n))$ (C) A(n) = O(W(n))(D) A(n) = o(W(n))



Question 3 [1 Marks]

Which of the following is not O(n^2)?



The order of growth of option c is $n^{2.5}$ which is higher than n^2 .

Your submitted response was correct.

Question 4 [1 Marks]

```
Which of the given options provides the increasing order of asymptotic complexity of functions f1, f2, f3 and f4? f1(n) = 2^n f2(n) = n^3(3/2) f3(n) = n \log n f4(n) = n^4(\log n)
```

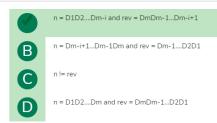


Question 5 [1 Marks]

Consider the following program fragment for reversing the digits in a given integer to obtain a new integer. Let n = D1D2...Dm

int n, rev;
rev = 0;
while (n > 0)
{
 rev = rev*10 + n%10;
 n = n/10;
}

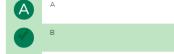
The loop invariant condition at the end of the ith iteration is: (GATE CS 2004)



Question 6 [1 Marks]

```
Consider the following function

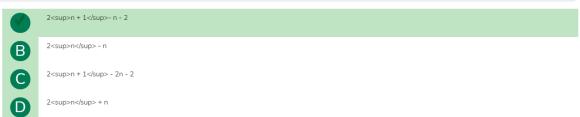
int unknown(int n) {
   int i, j, k = 0;
   for (i = n/2; i <= n; i++)
      for (j = 2; j <= n; j = j * 2)
        k = k + n/2;
   return k;</pre>
```





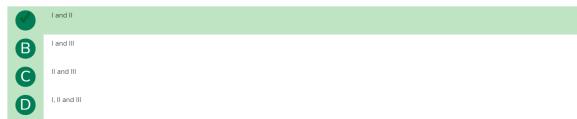
Question 7 [1 Marks]





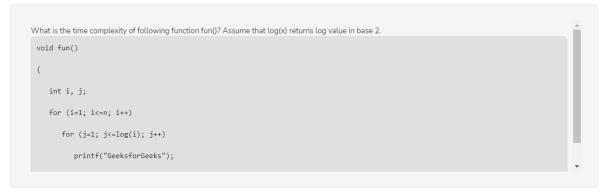
Question 8 [1 Marks]

Consider the following three claims $| (n+k) \land m = \theta(n \land m), \text{ where } k \text{ and } m \text{ are constants}$ $| | 2 \land (n+1) = 0(2 \land n)$ $| | | | 2 \land (2n+1) = 0(2 \land n)$ Which of these claims are correct? (GATE CS 2003)



Question 9 [1 Marks] Consider the following C code segment int f (int x) { if (x < 1) return 1; else return (f(x-1) + g(x)) } Linear Exponential Quadratic Quadratic D Cubic

Question 10 [1 Marks]







Θ(n^2(Logn))