TEST - 1 (Marks scored -- 12/20)

Max- Marks - 20
Min-Marks - (-12)
Time Limit - 20 mins

1. It is given that, **Marks +8 , 0**
   1 <= n <= 100, 1 <= sum <= 100,000;
   1 <= test_cases <= 10
   Memory Limit : 256 MB
   Time Limit : (1 + 1) sec [extra 1 sec because you are exceptionally cute]

```
#include <bits/stdc++.h>
using namespace std;

void solve () {
        int n, sum;
        cin >> n >> sum ;
        int dp[n][sum];

        for(int i = 0; i< n; i++) {
                for(int j = 0; j < sum; j++) {
                        dp[i][j] = 0;
                }
        }
}
int main () {

        int test_cases;
        cin >> test_cases;
        while ( test_cases -- ) solve();

        }
```

which of the following is/are true :
(a) . This code will run absolutely fine without any errors
(b) . This code will throw an compilation error because there is no return in main.
(c) . This code will throw a TLE.
(d) . This code will throw a run time error because more than 256 MB of memory is used.

2. pseudocode ahead. **Marks +3 , - 3**

```
int main ( ) {
```

```
int a, b; cin >> a >> b;
int hcf = __gcd(a,b);
int lcm = (a * b) / hcf;
for(int i = 0; i< a; i++) {
        for(int j = 0; j< b; j++) {
            cout << i << " " < j << endl;
        }
}
```

The Time complexity of the above code is?

(a) O(log(a) * log(b)) ;
(b) if a is smaller than b then O(log(a));
(c) O(a+b)
(d) O(a*b)

3. An array of size n is given to you and you are required to find the max value from it. **+5,-1**
The time complexity(using an optimised algorithm) , space complexity and auxiliary space used are in order

(a) O(n), O(n), O(1) O(n^2), O(n), O(1)
(b) O(n), O(1), O(n)
(c) O(n), O(1), O(1)

4. The time complexity of **+4, -8**
Merge sort , GCD, Sieve of Eronthesis are in order

(a) O(n), O(logn), O(logn)
(b) O(logn), O(nlogn), O(nloglogn)
(c) O(n), O(logn), O(n)
(d) O(nlogn) , O(logn) , O(nloglogn)

Answers
1.d
2.d
3.a
4.d