RV UNIVERSITY Go, change the world an initiative of RV EDUCATIONAL INSTITUTIONS **School of Computer Science & Engineering** **B.Tech(H) Program**	**Class Test #1 - Sample Paper** **Academic Year: 2023-24** **Term: Aug 02 to Nov 29, 2023** **Semester: 3 Section: A,C**
	Date: **Time:** **USN:** **Student Name:** **Course Code:** CS2000 **Course Name:** Design & Analysis of Algorithms **Max Marks:** 20 (scaled to 10)

Usage/watching mobile Phones, smart watches or any other internet enabled devices are treated as malpractice.

Instructions to Students: ***Answer all questions.***
You have to implement program for Q# 3 after handing over the paper & upload in Google Classroom.
Q#1, #2 needs to be written on paper.
Note: This is a sample question paper, similar questions will be asked.

1. **a)** Write pseudocode/algorithm for finding maximum element in an array **(2 marks)**

b) What is the basic operation of this algorithm? **(1 mark)**

e) How many times, the basic operation is executed? **(1 mark)**

f) What is the Best Case, Average Case & Worst Case Efficiency? **(1 mark)**

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2. **Given the below algorithm,**

```
Alg(n)
{
    int i;
    for(i=1;i<=n;i=i*2)
            print("DAA")

}
```

a. compute the time complexity of the above algorithm **(2 marks)**

b. What is the time complexity of above algorithm if i is increased by, i = i*n **(2 marks)**

c. Given $f(n) = n^3+n^2$, $g(n) = n^3$, verify $f(n) = O(g(n))$ is true or not? **(2 marks)**

d. What is the time complexity of an algorithm that does not have either iteration or recursive in it? **(2 marks)**

3. Write a program to find the maximum element in an array. Hackerrank contest will be created for this problem. **(5 marks)**

a. What is the time complexity of the algorithm for which you have written the code. **(2 marks)**

b. Can you think of a better algorithm (in terms of space, time efficiency) compared to yours?**.** **(2 marks)**

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