New Horizon College of Engineering, Bangalore.
Autonomous College Affiliated to VTU
Department of MCA
Session: Jan 20 – May 20
IV Semester MCA

Course Name : Design & Analysis of Algorithms **Course Code : 19MCA42**

First Assignment Questions

Group1

1.	Compute the following sums and give its order of growth rate: (i) $\sum_{i=3}^{n+1} i$ (ii) $\sum_{i=0}^{n-1} i(i+1)$	**2M**	**L3**	**CO1**
2.	Evaluate the following recurrence relations: a) $x(n) = 2x(n/2) + n$ for $n > 1$, $x(1) = 1$ (solve for $n = 2^k$) b) $x(n) = x(n-1) + 5$ for $n > 1$, $x(1) = 0$	**2M**	**L5**	**CO1**
3.	Design an algorithm to find GCD of 3 Numbers.	**2M**	**L6**	**CO1**
4.	Apply Merge sorting procedure to sort the list N, E, W, H, O, R, I, Z, O, N in alphabetical order. Draw its tree calls.	**1.5M**	**L3**	**CO2**

Group2

1.	Compute the following sums and give its order of growth rate: (i) $\sum_{i=0}^{n-1} (i^2+1)^2$ (ii) $\sum_{i=1}^{n} \sum_{j=1}^{n} ij$	**2M**	**L3**	**CO1**
2.	Evaluate the following recurrence relations: a) $x(n) = x(n/3) + 1$ for $n > 1$, $x(1) = 1$ (solve for $n = 3^k$) b) $x(n) = x(n-1) + n$ for $n > 0$, $x(0) = 0$	**2M**	**L5**	**CO1**
3.	Design an algorithm to find the Fibonacci series.	**2M**	**L6**	**CO1**
4.	Apply Quick sort algorithm to sort the list N, E, W, H, O, R, I, Z, O, N in alphabetical order.	**1.5M**	**L3**	**CO2**

Group3

1.	Compute the following sums and give its order of growth rate: (i) $1+3+5+7+ \ldots\ldots + 999$ (ii) $\sum_{i=3}^{n+1} 1$	**2M**	**L3**	**CO1**
2.	Evaluate the following recurrence relations: a) $x(n) = x(n/2) + n$ for $n > 1$, $x(1) = 1$ (solve for $n = 2^k$) b) $x(n) = 3x(n-1) + n$ for $n > 0$, $x(0) = 0$	**2M**	**L5**	**CO1**
3.	Design an algorithm to find the Prime numbers from 1 to N.	**2M**	**L6**	**CO1**
4.	Apply Merge sort algorithm to sort the list E, X, A, M, P, L, E, O, N in alphabetical order. Draw its tree calls.	**1.5M**	**L3**	**CO2**

Note: Submission date on or before 10th February 2020