	B. M.S. COLLEGE OF ENGINEERING, BANGALORE-19 (Autonomous Institute, Affiliated to VTU) **Department Name: CSE**

Second INTERNALS – Online		
Course Code : 20CS5PEAAG	**Course Title : Advanced Algorithms**	
Semester :5th	**Maximum Marks: 40**	**Date: 2-12-2020**
Faculty Handling the Course:	NN,GRP	
Instructions: ***Internal choice is provided in Part C.***		

PART-A

Total 5 Marks (No choice)

No.	Question	Marks	CO No.	Level
1a	How many comparisons are made by the naive string matching technique in searching for pattern "00001" in the binary text of 1000 zeros?	**5M**	**2**	**2**

PART-B

Total 15 Marks (No Choice)

No.	Question	Marks	CO No.	Level
2a	Discuss how speed up is achieved by designing a multithreaded algorithm for matrix multiplication.	**5M**	**2**	**3**
2b	Design a multithreaded algorithm (**using only spawn and sync)** for computing SUM(n) = 1 + ...+ 1 i.e. SUM(n) = n. The sequential algorithm is given below. Algorithm SUM1(n) 1: if n = 0 return 0 2: SUM1= 0 3: for i = 1to n do SUM1 = SUM1 + 1 4: return SUM1 Derive the performance metrics SPAN and WORK of the multithreaded algorithm for computing SUM(n).	**5M**	**3**	**3**
2c	Apply multithreaded merge sort to sort 15, 9, 12, 7, 11, 6	**5M**	**1**	**3**

PART- C

Total 20 Marks (Choice)

No.	Question	Marks	CO No.	Level
3a	Design an algorithm for string matching using Rabin-Karp approach. Also apply the same to search for P="tcac" in T="gtgatcagatcact ".	**10M**	**2,3**	**2,3**
	OR			
3b	Design an algorithm for string matching using Finite Automata. Also apply the same to search for P="aabb" in T="aababaabaaabbab"	**10M**	**2,3**	**2,3**

4a	Design pseudocode/program to for string matching using Horspool's technique. Apply the same to search for P="ACAGTA" in T="GCATCGCAGAGAGTATACAGTACG"	**10M**	**2,3**	**2,3**
OR				
4b	Design pseudocode/program for string matching using Boyer Moore approach. Apply the same to search for P="ATGTA" in T="GTACTAGAGACGTATGTACTG"	**10M**	**2,3**	**2,3**