

## B. M.S. COLLEGE OF ENGINEERING, BANGALORE-19

(Autonomous Institute, Affiliated to VTU)

**Department Name: CSE** 

## First INTERNALS – Online

Course Code: 20CS5PEAAG | Course Title: Advanced Algorithms

Semester:5th Maximum Marks: 40 Date: 23-10-2020

**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	Compare Dynamic programming with Divide and conque approach.	5M	1	4

PART-B
Total 15 Marks (No Choice)

No.	Question   Mar   CO   Lo											
110.	Anconon	ks	No.	Le vel								
		KS	110.	VCI								
2a	Apply Ford Fulkerson Method to find maximum flow in the below flow	5M	2	3								
	network.											
	network.											
	6											
	7 a b 7											
	, , , , , , , , , , , , , , , , , , ,											
	3 5											
	$\left(\begin{array}{c} s \\ \end{array}\right)$											
	8 5 2											
	(c)											
	7											
2b		5M	2	3								
20	Find shortest path from source to destination using Dynamic	21/1	4	3								
	programming with forward approach.											
	1											
	$(a) \longrightarrow (b)$ 2											
	7 (f)											
	8											
	3											
	$\begin{pmatrix} s \end{pmatrix}$ 1 $\begin{pmatrix} 4 \end{pmatrix}$ 7 $\begin{pmatrix} t \end{pmatrix}$											
	$\frac{1}{2}$											
	8 (c) (d) (g) 4											
	7 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \											
	1											
	\ \ '											
	3											
	*(e)											
	$igcup_{\mathcal{C}}$											

Apply Dynamic programming to find threshold floor in Egg dropping puzzle, assuming n=3 eggs and k=5 floors.	5M	2	3
			i l

## PART- C Total 20 Marks (Choice)

NIO	Overtion Over 10tal 20 Marks (Choice)											Marks	CO	Lovel
No.	Question									MIAIKS	CO No.	Level		
													110.	
3a	Design an algorithm to find solution to rod cutting problem using dynamic programming. Also apply the same to solve below										using	10M	2,3	2,3
											below			
	instance.													
	Rod length=7													
		1			_		1	1		1				
	Length	1	2	3	4	5	6	7	8	9	10			
	i													
	Price	1	6	8	9	10	17	17	20	24	30			
	Pi													
							0	K						
3b	Design an algorithm to find order in which matrices are to be multiplied so as to minimize the number of multiplications using										to be	10M	2,3	2,3
	dynamic programming. Also apply the same to solve below													
	instance.													
	A1 *A2*A3*A4*A5													
		120 121 140												
	A1=3*8 A2=8*6 A3=6*5 A4=5*2 A5=2*4													
4a	Design n	senda	ocode	/nrog	ram ta	a find	long	est co	mmo	n sea	nence	10M	2,3	2,3
	Design pseudocode/program to find longest common sequence								101.1	_,c	_,=			
	between two strings using dynamic programming. Also apply the same to solve below instance.													
	same to s	oive	below	ınsta	ince.									
	S1-ARC	RDA	R and	1 \$2-1	RDC4	RΔ								
	S1=ABCBDAB and S2=BDCABA													
	I						0	R				1		I
41										103.7	2.2	0.3		
4b	Design pseudocode/program to find longest increasing									10M	2,3	2,3		
	subsequence using dynamic programming. Trace the algorithm for the following input sequence and find longest increasing subsequence in $T=\{5,2,3,7,1,9,2,3\}$													