



**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 conquer approach.	5M	1	4

**PART-B**

**Total 15 Marks (No Choice)**

No.	Question	Marks	CO No.	Level
2a	<p>Apply Ford Fulkerson Method to find maximum flow in the below flow network.</p>	5M	2	3
2b	<p>Find shortest path from source to destination using Dynamic programming with forward approach.</p>	5M	2	3

<b>2c</b>	Apply Dynamic programming to find threshold floor in Egg dropping puzzle, assuming $n=3$ eggs and $k=5$ floors.	<b>5M</b>	<b>2</b>	<b>3</b>
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### PART- C

**Total 20 Marks (Choice)**

Total 10 Marks (Choice)											Total Marks	CO No.	Level
No.	Question										Marks	CO No.	Level
3a	Design an algorithm to find solution to rod cutting problem using dynamic programming. Also apply the same to solve below instance.  Rod length=7										10M	2,3	2,3
	Length i	1	2	3	4	5	6	7	8	9			
Price Pi	1	6	8	9	10	17	17	20	24	30			
OR													
3b	Design an algorithm to find order in which matrices are to be multiplied so as to minimize the number of multiplications using dynamic programming. Also apply the same to solve below instance.  A1 *A2*A3*A4*A5  A1=3*8   A2=8*6   A3=6*5   A4=5*2   A5=2*4										10M	2,3	2,3
OR													
4a	Design pseudocode/program to find longest common sequence between two strings using dynamic programming. Also apply the same to solve below instance.  S1=ABCB DAB and S2=BDCABA										10M	2,3	2,3
OR													
4b	Design pseudocode/program to find longest increasing 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 }										10M	2,3	2,3