Third INTERNALS – Online

Course Code : 20CS5PEAAG	**Course Title : Advanced Algorithms**	
Semester :5th	**Maximum Marks: 40**	**Date: 6-01-2021**
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	Explain how sweep line algorithm can be used for finding intersection of line segments.	**5M**	**2**	**1**

PART-B
Total 15 Marks (No Choice)

No.	Question	Marks	CO No.	Level
2a	Convert the below LPP to standard form Maximize x1+2x2 Subjected to x1+x2 > 40 x1-x2 >14 x1-2x2 < =3	**5M**	**1**	**2**
2b	Check whether the points (10,25)and (10,55) are co linear or not.	**5M**	**1**	**2**
2c	Formulate single source shortest path problem as LPP.	**5M**	**2**	**3**

PART- C
Total 20 Marks (Choice)

No.	Question	Marks	CO No.	Level
3a	Solve the below LPP using Simplex method. Maximize 15x1 + 10x2 Subject to 4x1+6x2 < =360 3x1<= 180 5x2<=200	10M	2	2
	OR			
3b	Solve the below LPP using Simplex method. maximize z=5x1+3x2 subject to 3x1+5x2<=15 x1+2x2<=10 2x1+5x2<=90	10M	2	2
4a	Apply Graham scan algorithm to find convex hull for the below points. <table><tr><td>P0</td><td>(0,0)</td></tr><tr><td>P1</td><td>(20,0)</td></tr><tr><td>P2</td><td>(10,15)</td></tr><tr><td>P3</td><td>(15,30)</td></tr><tr><td>P4</td><td>(20,40)</td></tr><tr><td>P5</td><td>(15,20)</td></tr></table>	10M	2	2
	OR			
4b	Design pseudo code/ program for checking whether a pair of line segments intersect or not. Apply the same to check line segment (p1,p2) intersects with(p3,p4). P1=(10,10) P2=(30,30), P3=(20,20) and p4=(40,10)	10M	2,3	2,3