

Department of Mathematical Sciences
Carnegie Mellon University
21-393 Operations Research II
Test 1

Name: _____

Problem	Points	Score
1	33	
2	33	
3	34	
Total	100	

Q1: (33pts)

Find a stable solution to the following game:

$$\begin{bmatrix} 3 & 4 \\ 4 & -1 \end{bmatrix}$$

Q2: (33pts) Solve the following integer programming problem using branch and bound.

$$\begin{aligned} & \text{maximise} && 2x_1 + 3x_2 \\ & \text{subject to} && \\ & && x_1 + 2x_2 \leq 2 \\ & && 3x_1 + x_2 \leq 4 \\ & && x_1, x_2 \geq 0 \text{ and integer.} \end{aligned}$$

Q3: (34pts) A student is preparing for four tests T_1, T_2, T_3, T_4 and only has 5 hours in which to study. The following table S gives the number of points the student will get on T_i if he/she spends j hours studying for that test. **Use Dynamic Programming** to find the strategy that maximises the students points.

Hours	T_1	T_2	T_3	T_4
0	50	50	50	50
1	60	65	60	70
2	75	70	70	80
3	80	80	70	80
4	90	85	70	80
5	95	90	70	85