Student Name: _____ _____ J#: _____

CSC 323 Algorithm Design and Analysis, Fall 2017
Instructor: Dr. Natarajan Meghanathan

Quiz 5 (Take Home) **Due: Oct. 31, 2017: 11.30 AM** **Max. Points: 50**

Submission: Print this quiz, answer in the space provided and submit a hardcopy (either printed or handwritten-version in class at 11.30 AM)

Q1 - 25 pts) Given the following items, their weights and values, compute the maximum value of the items that could be accumulated in a knapsack of weight W = 6 lb (also listed in the table). Compute your solutions as:

(i) Fractional Knapsack problem
(ii) Integer Knapsack problem (W = 6 lb)
(iii) Using the result of (ii), determine the total maximum value and the corresponding items that can be picked if the Knapsack weight is reduced to 5 lb.

Show all the work (including the value and history tables for the Integer Knapsack problem)

Armon Clark

Item	Value($)	Weight (lb)
1	12	2
2	25	3
3	30	4
4	18	3
5	10	1

Daniel Epps

Item	Value ($)	Weight (lb)
1	20	2
2	13	1
3	25	2
4	39	4
5	27	3

Allee Gammons

Item	Value ($)	Weight (lb)
1	45	3
2	62	4
3	18	1
4	35	2
5	20	1

Menlik Getachew

Item	Value($)	Weight (lb)
1	11	1
2	31	4
3	10	2
4	18	3
5	12	2

Taylor Hasty

Item	Value ($)	Weight (lb)
1	41	3
2	28	2
3	46	4
4	24	2
5	13	1

Derrick Jackson

Item	Value ($)	Weight (lb)
1	19	1
2	80	4
3	25	2
4	45	3
5	15	1

Devario Lewis

Item	Value($)	Weight (lb)
1	15	2
2	19	3
3	28	4
4	20	3
5	8	1

Jai-Michael McMillian

Item	Value ($)	Weight (lb)
1	10	2
2	12	3
3	19	4
4	8	1
5	14	2

Nahu Merawi

Item	Value ($)	Weight (lb)
1	24	3
2	35	4
3	19	2
4	13	1
5	11	1

Taj Nelson

Item	Value($)	Weight (lb)
1	10	1
2	19	2
3	25	2
4	40	4
5	32	3

Patricia Perry

Item	Value ($)	Weight (lb)
1	100	2
2	120	4
3	90	3
4	110	3
5	115	2

Daniel Powell

Item	Value ($)	Weight (lb)
1	14	2
2	20	3
3	15	2
4	10	1
5	30	4

Student Name: _____ _____ J#: _____

Aiyanna Price

Item	Value($)	Weight (lb)
1	23	2
2	33	3
3	40	4
4	21	2
5	11	1

Allaysia Roberts

Item	Value ($)	Weight (lb)
1	17	2
2	24	3
3	33	4
4	11	1
5	30	3

Dreshon Sanders

Item	Value ($)	Weight (lb)
1	15	3
2	20	4
3	22	3
4	12	1
5	17	2

Miracle Williams

Item	Value($)	Weight (lb)
1	32	4
2	23	3
3	30	4
4	11	2
5	7	1

Michael Wilson

Item	Value ($)	Weight (lb)
1	7	2
2	14	3
3	23	4
4	11	1
5	20	3

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Q2 - 25 pts) Use the dynamic programming approach to:
(i) Find the longest common subsequence (LCS) of the two sequences (row sequence and column sequence) assigned to you. Show the table for the length of the LCS of any two subsequences of the given sequences (as discussed in the slides), identify the length of the LCS as well as deduce the alignment (including the gap), as discussed in the slides.
(ii) Use the table determined for (i) to find the length of the LCS of the subsequences comprising the first five characters of the row and column sequences as well as deduce the alignment (including the gap).

Student Name	**Row Sequence**	**Column Sequence**
Armon Clark	TCGCCTT	GGGGTAACT
Daniel Epps	TAAAATCTAG	CTTGGATC
Allee Gammons	GTGTGGAAAC	GCTTCTTTCT
Menlik Getachew	AGGACGGTGAA	AATTTTTA
Taylor Hasty	CGGCCAGGCGAT	CGAGGTAAGTAG
Derrick Jackson	GCTATTAT	ATAGAAATC
Devario Lewis	TTCTGATGTT	TCGGGAT
Jai-Michael McMillian	CAGATGTATCTG	GAGACAGGAT
Nahu Merawi	CTCAGGT	GTGAGGGGGA
Taj Nelson	GATTGCACTA	GTAGCAGT
Patricia Perry	GCTAAGC	AGTGCCG
Daniel Powell	ATCACC	GCTCGATCTGCA
Aiyanna Price	TTTTAATCCAGC	TGCAGAGAACTA
Allaysia Roberts	GAGTAAG	GCGACG
Dreshon Sanders	CCCCTATAGT	CTGACG
Miracle Williams	AGAGGC	CAATCGCAACGC
Michael Wilson	TATCAA	TGGACTCCGCAC

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