Quiz 5

① min { 15 + 30 = 45 ← 0.5 points
(1,2) (2,4)

25 + 12 = 37 ← 3 points
(1,3) (3,4)

40 = 40 ← 0.5 points
(1,4)

1 Point
1 Point

k	4
	37
	1,2,3,4

1 Point ~~1 Point~~ ← 2 Points

(2)

0	1	2	3
1	0	0	0
1	3	2	1
1	6	5	4
1	9	8	7
1	12	11	10
1	15	14	13

(a) 1 Points

(b) 13 1 Point

(c) 7 & 8 1 Points

(3) ⓐ $v[2,9] = \max\begin{cases} v[1,9] & = 5 \\ 3 + v[1,5] & = 3+5 = (8) \end{cases}$ ← 1 Point

ⓑ $v[3,9] = \max\begin{cases} v[2,9] & = 8 \\ 8 + v[2,4] & = 8+5 = (13) \end{cases}$ ← 1 Point

ⓒ $v[4,9] = \max\begin{cases} v[3,9] & = (13) \\ 6 + v[3,3] & = 6+5 = 11 \end{cases}$ ← 1 Point

ⓓ $v[5,9] = \max\begin{cases} v[4,9] = (13) \\ 12 + v[4,2] = 12+0 = 12 \end{cases}$ ← 1 Point

~~ⓔ 13~~ ~~← 1 Point~~

ⓕ $v[5,9]$ goes back to $v[3,9]$

object 3 with value 8 and weight 5

object 1 with value 5 and weight 3

Total weight (8)

2 Point 2 Point

no credit for direct answers without showing computation.

④ (a) entry (2,4)

$A_2A_3A_4 = (A_2A_3)A_4 \Rightarrow 1250 + 5.10.20 = 1250 + 1000 = 2250$

or $A_2(A_3A_4) \Rightarrow 5.25.20 + 5000 = 2500 + 5000 = 7500$

2 Points

(b) entry (1,4)

3 Points

$A_1A_2A_3A_4 = A_1(A_2A_3A_4)$

or $(A_1A_2)(A_3A_4)$

or $(A_1A_2A_3)A_4$

$A_1(A_2A_3A_4)$: $12 \times 5 \times 20 + 2250 = 1200 + 2250 = 3450$

$(A_1A_2)(A_3A_4)$: $1500 + 12.25.20 + 5000 =$ very high

$(A_1A_2A_3)A_4$: $1850 + 12.10.20 = 1850 + 2400 = 4250$

(c) Parenthesization

$A_1((A_2A_3)A_4)$

← 1 Points