

Assignment-3

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1)

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
5	2	3	3	3
1	3	5	2	2
3	4	4	4	1
4	5	1	5	4
2	1	2	1	5

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
A	E	D	B	B
D	B	B	D	C
B	A	C	A	E
C	C	E	E	A
E	D	A	C	D

First we match the male with females who did not get proposals before

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
5	2	3	3	3
1	3	5	2	2
3	4	4	4	1
4	5	1	5	4
2	1	2	1	5

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
A	E	D	B	B
D	B	B	D	C
B	A	C	A	E
C	C	E	E	A
E	D	A	C	D

The woman rejects each the male and sees her best match in her list. All the males who get rejected proposes to next girl and find his match.

A \rightarrow 1

B \rightarrow 4

C \rightarrow 5

D \rightarrow 3

E \rightarrow 2

is the stable match.

2)

A₁: H5 H2 H1 H3 H4

A₂: H5 H4 H3 H1 H2

A₃: H4 H2 H3 H5 H1

A₄: H2 H1 H5 H3 H4

A₅: H2 H4 H1 H5 H3

The Pareto optimal solutions are:

A1: H5
A2: H4
A3: H3
A4: H1
A5: H2

A1: H5
A2: H3
A3: H4
A4: H1
A5: H2

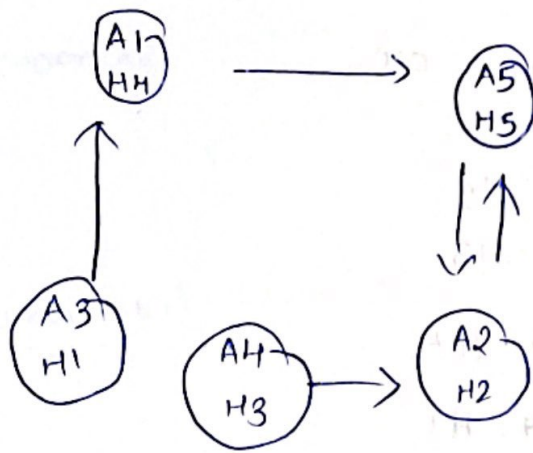
A1: H1
A2: H5
A3: H4
A4: H3
A5: H2

A1: H2
A2: H5
A3: H3
A4: H4
A5: H4

A1: H5
A2: H4
A3: H1
A4: H3
A5: H2

For example

A1: H5	H2	H1	H3	H4
A2: H5	H4	H3	H1	H2
A3: H4	H2	H3	H5	H1
A4: H2	H1	H5	H3	H4
A5: H2	H4	H1	H5	H3



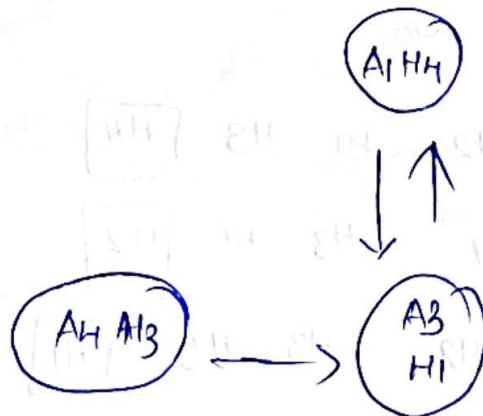
A1: ~~H5~~ ~~H2~~ H1 H3 H4

A2: H5 H4 H3 H1 ~~H2~~

A3: H4 H2 H3 ~~H5~~ H1

A4: ~~H4~~ H1 ~~H5~~ H3 H4

A5: H2 H4 H1 H5 H3



A1: H1 H4

A2: H5

A3: H4

A4: H3

A5: H2

3.

estate worth = \$500

marriage contracts of three widows = 100, 200, 300

uncontested for A is $500 - \left(\frac{200+300}{2} \right) = 0$

B is $500 - (100+300) = 100$

C is $500 - (100+200) = 200$

So $500 - (100+200) = 200$ should be divided among 3

$$\frac{200}{3} = 66.67$$

Estate
claims

500
100 200 300

uncontested division

0	100	200
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Equal division of remainder

66.67	66.67	66.67
66.67	166.67	266.67

The divided estates among 3 cordons are

66.67, 166.67, 266.67

4) O'Neil's low / race-to-the-bank method is

there 6 probabilities to divide the

estate among 3 cordons which are

Total:- 500

100, 200, 200

0, 200, 300

100, 100, 300

0, 200, 300

100, 100, 300

100, 200, 200

$\frac{400}{6}$, $\frac{1000}{6}$, $\frac{1600}{6}$

66.67, 166.67, 266.67 are divided among

3 cordons same as rule of linked

vessels

5. Estate worth = \$ 300

Contracts of 3 widows are

50 \$
\$ 100
\$ 200

The uncontested values of 3 widows are

$$1^{st} \text{ widow} :- 300 - (100 + 200) = 0$$

$$2^{nd} \text{ widow} :- 300 - (50 + 200) = 50$$

$$3^{rd} \text{ widow} :- 300 - (50 + 100) = 150$$

The contested values are the values where remaining amount is divided among 3.

$$300 - (50 + 150) = 100, \quad 100/3 = 33.33$$

Estate	300		
claims	50	100	200
uncontested	0	50	150
contested	33.33	33.33	33.33
	33.33	83.33	183.33

The estate divided among three widows according to rule of linked vessels are 33.33, 83.33, 183.33

6. According to o'neils law the 6 probabilities

divided among three widows are
Total:- 300

50 100 150

50 100 150

0 100 200

0 100 200

50 50 200

50 50 200

$$\frac{200}{6}, \frac{500}{6}, \frac{1100}{6}$$

33.3, 83.33, 183.33 are the values

according to o'neils law same as Rule of linked vessels