3.1.1

A = {1,2,3,4}

B = {2,3,5,7}

C = {2, 4, 6}

SIM(A,B) =

SIM(B,C) =

SIM(C,A) =

3.13

suppose , where . S then has choices and T has choices.

Therefore

And

10.4.1

Adjacency matrix

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E | F | G | H | I |
| A | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| B | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| C | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| D | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| E | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| F | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| G | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| H | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| I | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |

Degree matrix

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E | F | G | H | I |
| A | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| D | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| E | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| F | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| G | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| H | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| I | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |

Laplacian matrix

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E | F | G | H | I |
| A | 2 | -1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 |
| B | -1 | 3 | -1 | 0 | 0 | 0 | 0 | -1 | 0 |
| C | -1 | -1 | 3 | -1 | 0 | 0 | 0 | 0 | 0 |
| D | 0 | 0 | -1 | 3 | -1 | -1 | 0 | 0 | 0 |
| E | 0 | 0 | 0 | -1 | 3 | -1 | -1 | 0 | 0 |
| F | 0 | 0 | 0 | -1 | -1 | 2 | 0 | 0 | 0 |
| G | 0 | 0 | 0 | 0 | -1 | 0 | 3 | -1 | -1 |
| H | 0 | -1 | 0 | 0 | 0 | 0 | -1 | 3 | -1 |
| I | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 2 |