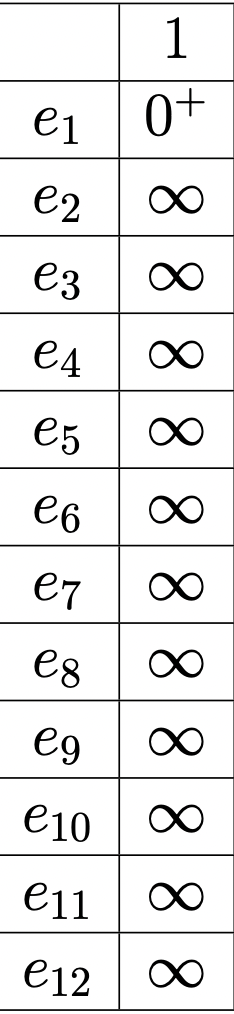
Дискретная математика Агадилова Малика P3133

Вариант № 7

*Кратчайшие пути, Алгоритм Дейскры*

| V/V | e1 | e2 | e3 | e4 | e5 | e6 | e7 | e8 | e9 | e10 | e11 | e12 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| e1 | 0 | 1 | 4 |  | 3 |  | 1 | 1 |  |  | 3 | 3 |
| e2 | 1 | 0 | 1 | 4 |  |  |  | 2 |  |  |  | 4 |
| e3 | 4 | 1 | 0 |  | 3 |  | 1 | 2 | 3 | 1 |  | 2 |
| e4 |  | 4 |  | 0 |  | 3 |  | 2 | 3 |  | 1 |  |
| e5 | 3 |  | 3 |  | 0 |  |  |  | 2 |  | 4 |  |
| e6 |  |  |  | 3 |  | 0 | 2 | 3 | 3 |  |  |  |
| e7 | 1 |  | 1 |  |  | 2 | 0 |  | 3 |  |  | 4 |
| e8 | 1 | 2 | 2 | 2 |  | 3 |  | 0 |  |  |  |  |
| e9 |  |  | 3 | 3 | 2 | 3 | 3 |  | 0 |  |  | 4 |
| e10 |  |  | 1 |  |  |  |  |  |  | 0 | 3 | 3 |
| e11 | 3 |  |  | 1 | 4 |  |  |  |  | 3 | 0 | 2 |
| e12 | 3 | 4 | 2 |  |  |  | 4 |  | 4 | 3 | 2 | 0 |

*1.l(e1)=0+, l(ei)=∞, для всех l != 1, p=1.*

*Гр = {e2, e3, e5, e7, e8, e11, e12}*

*l(e2)=min[∞,0+ +1]=1*

*l(e3)=min[∞,0+ +4]=4*

*l(e5)=min[∞,0+ +3]=3*

*l(e7)=min[∞,0+ +1]=1*

*l(e8) = min[∞, 0+ +1] = 1*

*l(e11) = min[∞, 0+ +3] = 3*

*l(e12) = min[∞, 0+ +3] = 3*

*2.l(ei∗ )=min[l(ei)]=l(e2)=1+.*

|  |  | 1 | 2 |
| --- | --- | --- | --- |
| l | e1 | 0+ |  |
| e2 | *∞* | *1+* |
| e3 | *∞* | *4* |
| e4 | *∞* | *∞* |
| e5 | *∞* | *3* |
| e6 | *∞* | *∞* |
| e7 | *∞* | *1* |
| e8 | *∞* | *1* |
| e9 | *∞* | *∞* |
| e10 | *∞* | *∞* |
| e11 | *∞* | *3* |
| e12 | *∞* | *3* |

*Гр = {e1, e3, e4, e8, e12}*

*l(e3)=min[4,1+ +1]=2*

*l(e4)=min[∞,1+ +4]=5*

*l(e8)=min[1,1+ +2]=1*

*l(e12)=min[3,1+ +4]=3*

*3.l(ei∗ )=min[l(ei)]=l(e7)=1+.*

|  |  | *1* | *2* | *3* |
| --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |
| *e2* | *∞* | *1+* |  |
| *e3* | *∞* | *4* | *2* |
| *e4* | *∞* | *∞* | *5* |
| *e5* | *∞* | *3* | *3* |
| *e6* | *∞* | *∞* | *∞* |
| *e7* | *∞* | *1* | *1+* |
| *e8* | *∞* | *1* | *1* |
| *e9* | *∞* | *∞* | *∞* |
| *e10* | *∞* | *∞* | *∞* |
| *e11* | *∞* | *3* | *3* |
| *e12* | *∞* | *3* | *3* |

*Гр = {e1, e2, e5, e7, e8, e9, e10, e12}*

*l(e5) = min[3, 1+ +3]=3*

*l(e8) = min[1, 1+ +2]=1*

*l(e9) = min[∞, 1+ +3]=4*

*l(e10) = min[∞, 1+ +1]=2*

*l(e12) = min[3, 1+ + 2] = 3*

*4.l(ei∗ )=min[l(ei)]=l(e8)=1+.*

|  |  | *1* | *2* | *3* | *4* |
| --- | --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |  |
| *e2* | *∞* | *1+* |  |  |
| *e3* | *∞* | *4* | *2* | *2* |
| *e4* | *∞* | *∞* | *5* | *5* |
| *e5* | *∞* | *3* | *3* | *3* |
| *e6* | *∞* | *∞* | *∞* | *∞* |
| *e7* | *∞* | *1* | *1+* |  |
| *e8* | *∞* | *1* | *1* | *1+* |
| *e9* | *∞* | *∞* | *∞* | *4* |
| *e10* | *∞* | *∞* | *∞* | *2* |
| *e11* | *∞* | *3* | *3* | *3* |
| *e12* | *∞* | *3* | *3* | *3* |

*Гр = {e2, e6, e8, e9, e11}*

*l(e6) = min[∞, 1+ +3]=4*

*l(e9) = min[4, 1+ +3]=4*

*l(e11) = min[3, 1+ +1]=2*

*5.l(ei∗ )=min[l(ei)]=l(e3)=2+.*

|  |  | *1* | *2* | *3* | *4* | *5* |
| --- | --- | --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |  |  |
| *e2* | *∞* | *1+* |  |  |  |
| *e3* | *∞* | *4* | *2* | *2* | *2+* |
| *e4* | *∞* | *∞* | *5* | *5* | *5* |
| *e5* | *∞* | *3* | *3* | *3* | *3* |
| *e6* | *∞* | *∞* | *∞* | *∞* | *4* |
| *e7* | *∞* | *1* | *1+* |  |  |
| *e8* | *∞* | *1* | *1* | *1+* |  |
| *e9* | *∞* | *∞* | *∞* | *4* | *4* |
| *e10* | *∞* | *∞* | *∞* | *2* | *2* |
| *e11* | *∞* | *3* | *3* | *3* | *2* |
| *e12* | *∞* | *3* | *3* | *3* | *3* |

*Гр = {e1, e3, e9, e11}*

*l(e9) = min[4, 2+ +2]=4*

*l(e11) = min[2, 2+ +4]=2*

*6.l(ei∗ )=min[l(ei)]=l(e10)=2+.*

|  |  | *1* | *2* | *3* | *4* | *5* | *6* |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |  |  |  |
| *e2* | *∞* | *1+* |  |  |  |  |
| *e3* | *∞* | *4* | *2* | *2* | *2+* |  |
| *e4* | *∞* | *∞* | *5* | *5* | *5* | *5* |
| *e5* | *∞* | *3* | *3* | *3* | *3* | *3* |
| *e6* | *∞* | *∞* | *∞* | *∞* | *4* | *4* |
| *e7* | *∞* | *1* | *1+* |  |  |  |
| *e8* | *∞* | *1* | *1* | *1+* |  |  |
| *e9* | *∞* | *∞* | *∞* | *4* | *4* | *4* |
| *e10* | *∞* | *∞* | *∞* | *2* | *2* | *2+* |
| *e11* | *∞* | *3* | *3* | *3* | *2* | *2* |
| *e12* | *∞* | *3* | *3* | *3* | *3* | *3* |

*Гр = {e4, e7, e8, e9}*

*l(e4) = min[5, 2+ +3]=5*

*l(e9) = min[4, 2+ +3]=4*

*7.l(ei∗ )=min[l(ei)]=l(e11)=2+.*

|  |  | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |  |  |  |  |
| *e2* | *∞* | *1+* |  |  |  |  |  |
| *e3* | *∞* | *4* | *2* | *2* | *2+* |  |  |
| *e4* | *∞* | *∞* | *5* | *5* | *5* | *5* | *5* |
| *e5* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* |
| *e6* | *∞* | *∞* | *∞* | *∞* | *4* | *4* | *4* |
| *e7* | *∞* | *1* | *1+* |  |  |  |  |
| *e8* | *∞* | *1* | *1* | *1+* |  |  |  |
| *e9* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* |
| *e10* | *∞* | *∞* | *∞* | *2* | *2* | *2+* |  |
| *e11* | *∞* | *3* | *3* | *3* | *2* | *2* | *2+* |
| *e12* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* |

*Гр = {e1, e3, e6, e9, e12}*

*l(e6) = min[4, 2+ +2]=4*

*l(e9) = min[4, 2+ +3]=4*

*l(e12) = min[3, 2+ +4]=3*

*8.l(ei∗ )=min[l(ei)]=l(e5)=3+.*

|  |  | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |  |  |  |  |  |
| *e2* | *∞* | *1+* |  |  |  |  |  |  |
| *e3* | *∞* | *4* | *2* | *2* | *2+* |  |  |  |
| *e4* | *∞* | *∞* | *5* | *5* | *5* | *5* | *5* | *5* |
| *e5* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3+* |
| *e6* | *∞* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* |
| *e7* | *∞* | *1* | *1+* |  |  |  |  |  |
| *e8* | *∞* | *1* | *1* | *1+* |  |  |  |  |
| *e9* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* | *4* |
| *e10* | *∞* | *∞* | *∞* | *2* | *2* | *2+* |  |  |
| *e11* | *∞* | *3* | *3* | *3* | *2* | *2* | *2+* |  |
| *e12* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3* |

*Гр = {e1, e2, e3, e4, e6}*

*l(e4) = min[5, 3+ +2]=5*

*l(e6) = min[4, 3+ +3]=4*

*9.l(ei∗ )=min[l(ei)]=l(e12)=3+.*

|  |  | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |  |  |  |  |  |  |
| *e2* | *∞* | *1+* |  |  |  |  |  |  |  |
| *e3* | *∞* | *4* | *2* | *2* | *2+* |  |  |  |  |
| *e4* | *∞* | *∞* | *5* | *5* | *5* | *5* | *5* | *5* | *5* |
| *e5* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3+* |  |
| *e6* | *∞* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* | *4* |
| *e7* | *∞* | *1* | *1+* |  |  |  |  |  |  |
| *e8* | *∞* | *1* | *1* | *1+* |  |  |  |  |  |
| *e9* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* | *4* | *4* |
| *e10* | *∞* | *∞* | *∞* | *2* | *2* | *2+* |  |  |  |
| *e11* | *∞* | *3* | *3* | *3* | *2* | *2* | *2+* |  |  |
| *e12* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3+* |

*Гр = {e3, e4, e5, e6, e7, e12}*

*l(e4) = min[5, 3+ +3]=5*

*l(e6) = min[4, 3+ +3]=4*

*10.l(ei∗ )=min[l(ei)]=l(e6)=4+.*

|  |  | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |  |  |  |  |  |  |  |
| *e2* | *∞* | *1+* |  |  |  |  |  |  |  |  |
| *e3* | *∞* | *4* | *2* | *2* | *2+* |  |  |  |  |  |
| *e4* | *∞* | *∞* | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *5* |
| *e5* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3+* |  |  |
| *e6* | *∞* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* | *4* | *4+* |
| *e7* | *∞* | *1* | *1+* |  |  |  |  |  |  |  |
| *e8* | *∞* | *1* | *1* | *1+* |  |  |  |  |  |  |
| *e9* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* | *4* | *4* | *4* |
| *e10* | *∞* | *∞* | *∞* | *2* | *2* | *2+* |  |  |  |  |
| *e11* | *∞* | *3* | *3* | *3* | *2* | *2* | *2+* |  |  |  |
| *e12* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3+* |  |

*Гр = {e3, e11, e12}*

*11.l(ei∗ )=min[l(ei)]=l(e9)=4+.*

|  |  | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* | *11* |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |  |  |  |  |  |  |  |  |
| *e2* | *∞* | *1+* |  |  |  |  |  |  |  |  |  |
| *e3* | *∞* | *4* | *2* | *2* | *2+* |  |  |  |  |  |  |
| *e4* | *∞* | *∞* | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *5* |
| *e5* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3+* |  |  |  |
| *e6* | *∞* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* | *4* | *4+* |  |
| *e7* | *∞* | *1* | *1+* |  |  |  |  |  |  |  |  |
| *e8* | *∞* | *1* | *1* | *1+* |  |  |  |  |  |  |  |
| *e9* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* | *4* | *4* | *4* | *4+* |
| *e10* | *∞* | *∞* | *∞* | *2* | *2* | *2+* |  |  |  |  |  |
| *e11* | *∞* | *3* | *3* | *3* | *2* | *2* | *2+* |  |  |  |  |
| *e12* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3+* |  |  |

*Гр = {e1, e4, e5, e10, e12}*

*l(e4) = min[5, 4+ +1]=5*

*12.l(ei∗ )=min[l(ei)]=l(e)=.*

|  |  | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* | *11* | *12* |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *l* | *e1* | *0+* |  |  |  |  |  |  |  |  |  |  |  |
| *e2* | *∞* | *1+* |  |  |  |  |  |  |  |  |  |  |
| *e3* | *∞* | *4* | *2* | *2* | *2+* |  |  |  |  |  |  |  |
| *e4* | *∞* | *∞* | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *5+* |
| *e5* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3+* |  |  |  |  |
| *e6* | *∞* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* | *4* | *4+* |  |  |
| *e7* | *∞* | *1* | *1+* |  |  |  |  |  |  |  |  |  |
| *e8* | *∞* | *1* | *1* | *1+* |  |  |  |  |  |  |  |  |
| *e9* | *∞* | *∞* | *∞* | *4* | *4* | *4* | *4* | *4* | *4* | *4* | *4+* |  |
| *e10* | *∞* | *∞* | *∞* | *2* | *2* | *2+* |  |  |  |  |  |  |
| *e11* | *∞* | *3* | *3* | *3* | *2* | *2* | *2+* |  |  |  |  |  |
| *e12* | *∞* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3+* |  |  |  |

*Гр = {e1, e2, e3, e7, e9, e10, e11}*