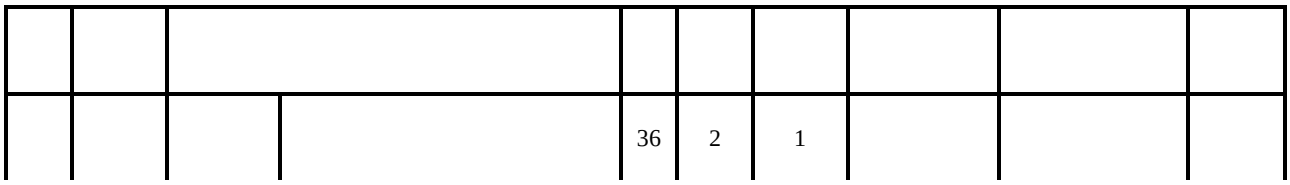
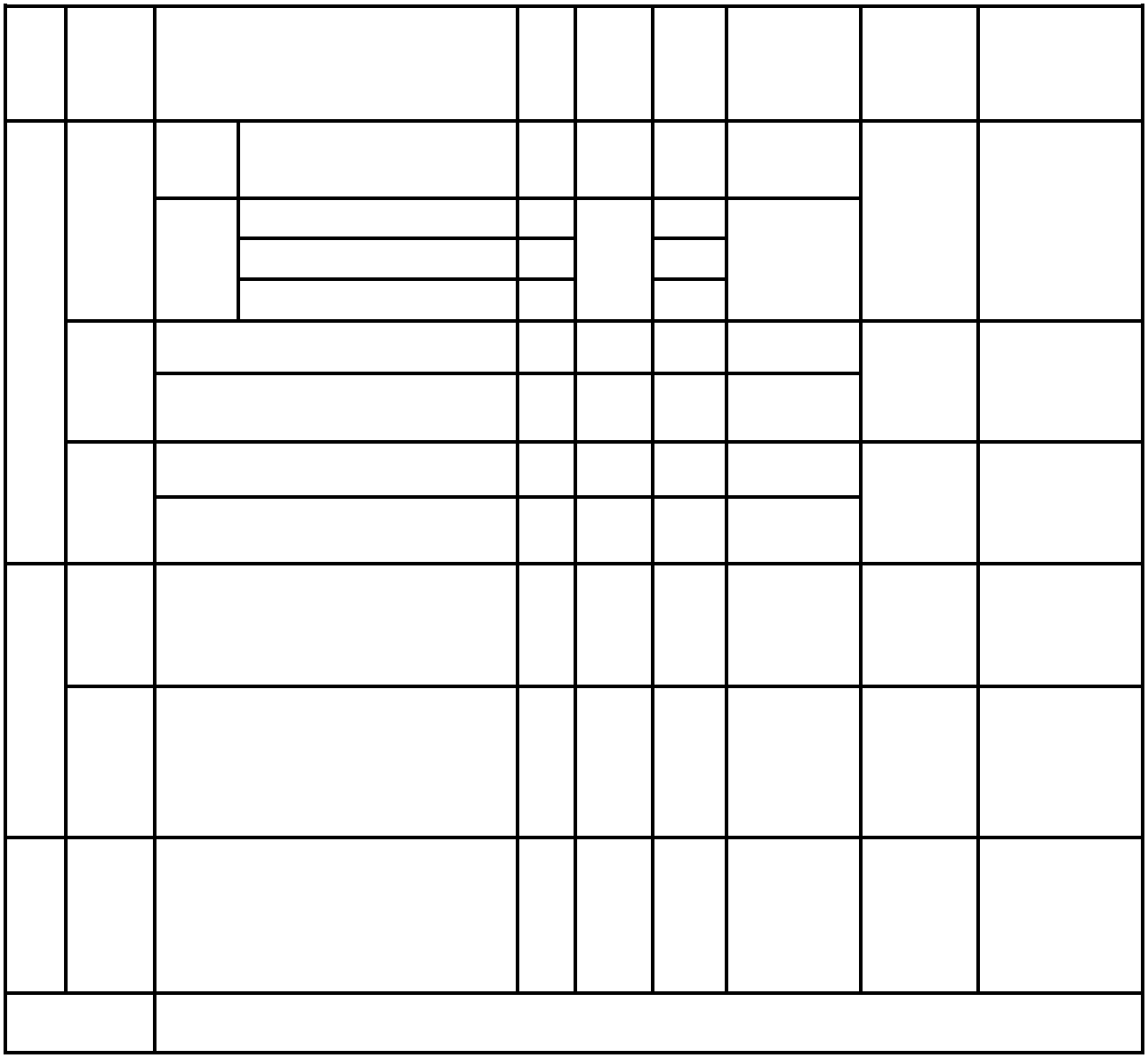


6

		10		1	
	20				



www.grs.ynu.edu.cn

2

3

4

5

6

3-5 6

							4	

030401

1

2

3

4

1

21

2

" " "

"

3

4

5

6

7

8

semiotic

9

,

10

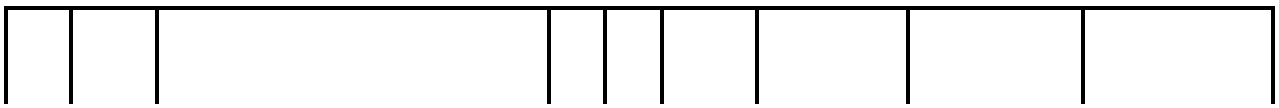
11

12

3-5 6

1

17



36 2 1

			36	2	2			
							1	
	18							

1-2

5 2

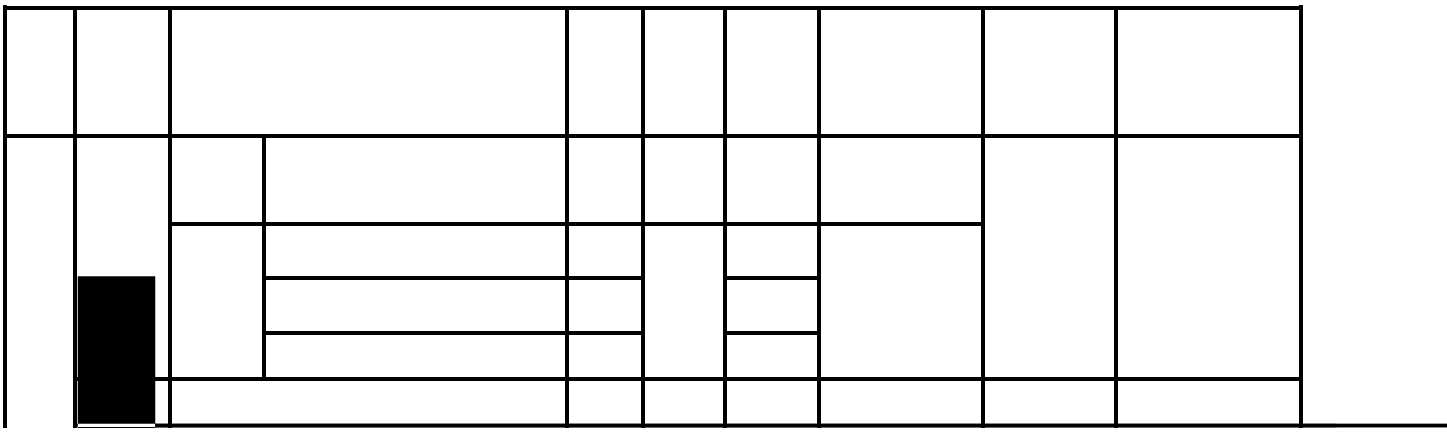
100

50

3

4

10



1

2

1

2

3

3-5 6

4

3-5 6

2

3

4

1

2

1

2

18

= /18

1 1

2

1

2

3

www.grs.ynu.edu.cn

0304Z3

1

2

3

3 5 6

www.grs.ynu.edu.cn

			54	3	1			
		1 1 1 1					1	
						2-3		
		19						

1 1 1

1

2-3

www.grs.ynu.edu.cn

1

2

3

1

2

3-5 6

				36	2	1		6	
				36	4	1			
				36					
				36					
				36	2	2		4	
				36	2	1			
				36	2	1		1 2	, 2
				36	2	1			
				36	2	2		2 4	
				36	2	2			
				36	2	2			
				36	2	2			

		1 2 3 4 600 3	1	
	17			

1

2

3

4 600

1

2

3

1

2

2

www.grs.ynu.edu.cn

030405

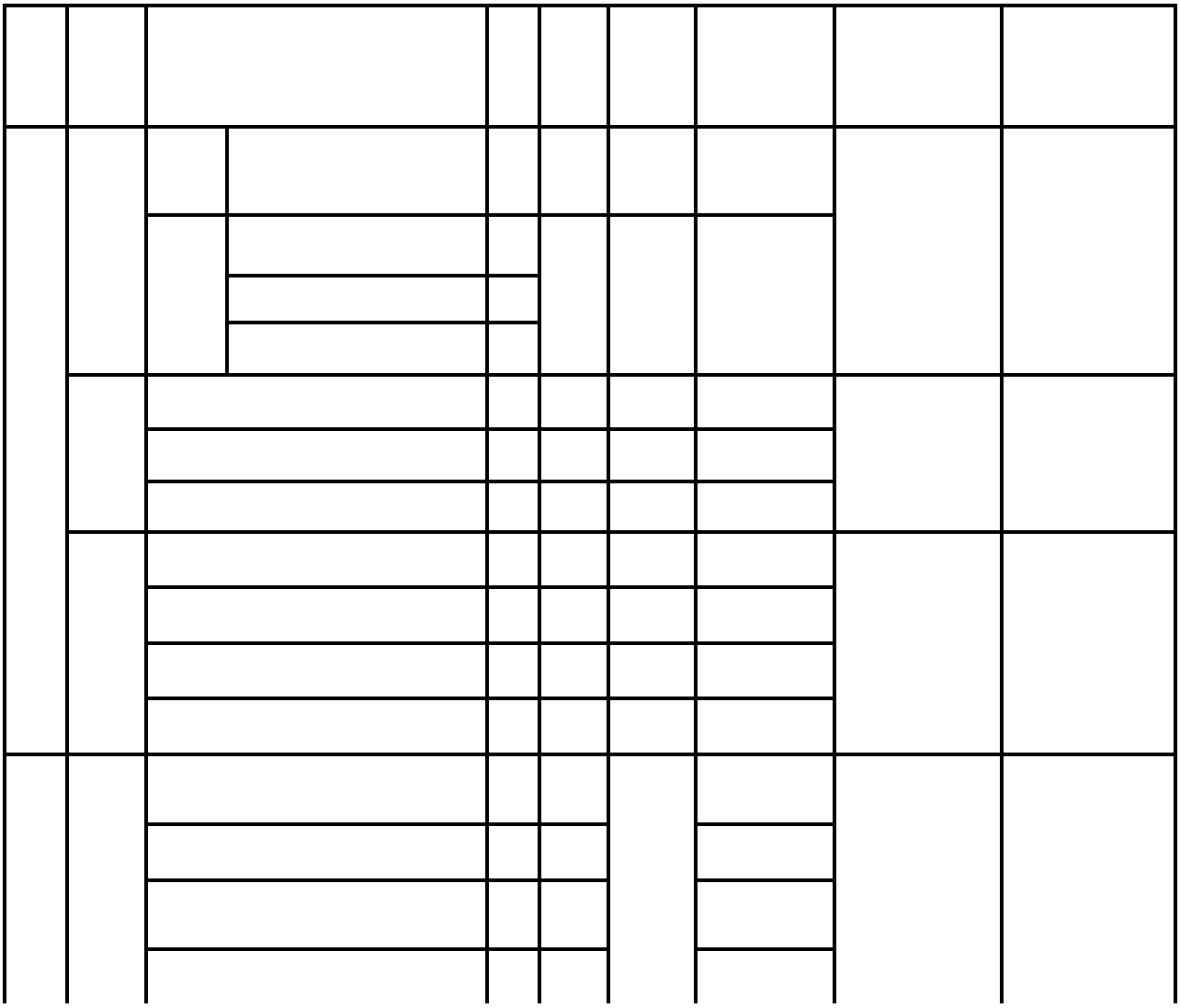
1

2

3

4

3 5 6



2

3

1

10 2

1

1

2

3 1 2

4

www.grs.ynu.edu.cn

				36	2	1		6	

				36	4	1			
				36					
				36					
				36	2	2			
				36	2	2			
				36	2	3			
				36	2	3			
				36		3-4			
				36		3-4			
		15							

050101

1

2

3

4

3 5 6

				36	2	1		6	
				36	4	1			
				36					
				36					
				54	3	2		6	
				54	3	2			
				36	2	3		2	
				36	2	3			
				36	2	3			
				36	2	3			
				36	2	4			
				36	2	4			
		1						1	
		1							
		15							

1

2

3

1 1

2 10 2

1

1

2

3 1 2

4

www.grs.ynu.edu.cn

050105

1

2

3

4

5

3 5 6

				36	2	1		
				36				
				36	4	1		6
				36				
				36	2	2		
				36	2	2		4
				36	2	3		

4

1

2

3

www.grs.ynu.edu.cn

050106

1

2

www.grs.ynu.edu.cn

1

2

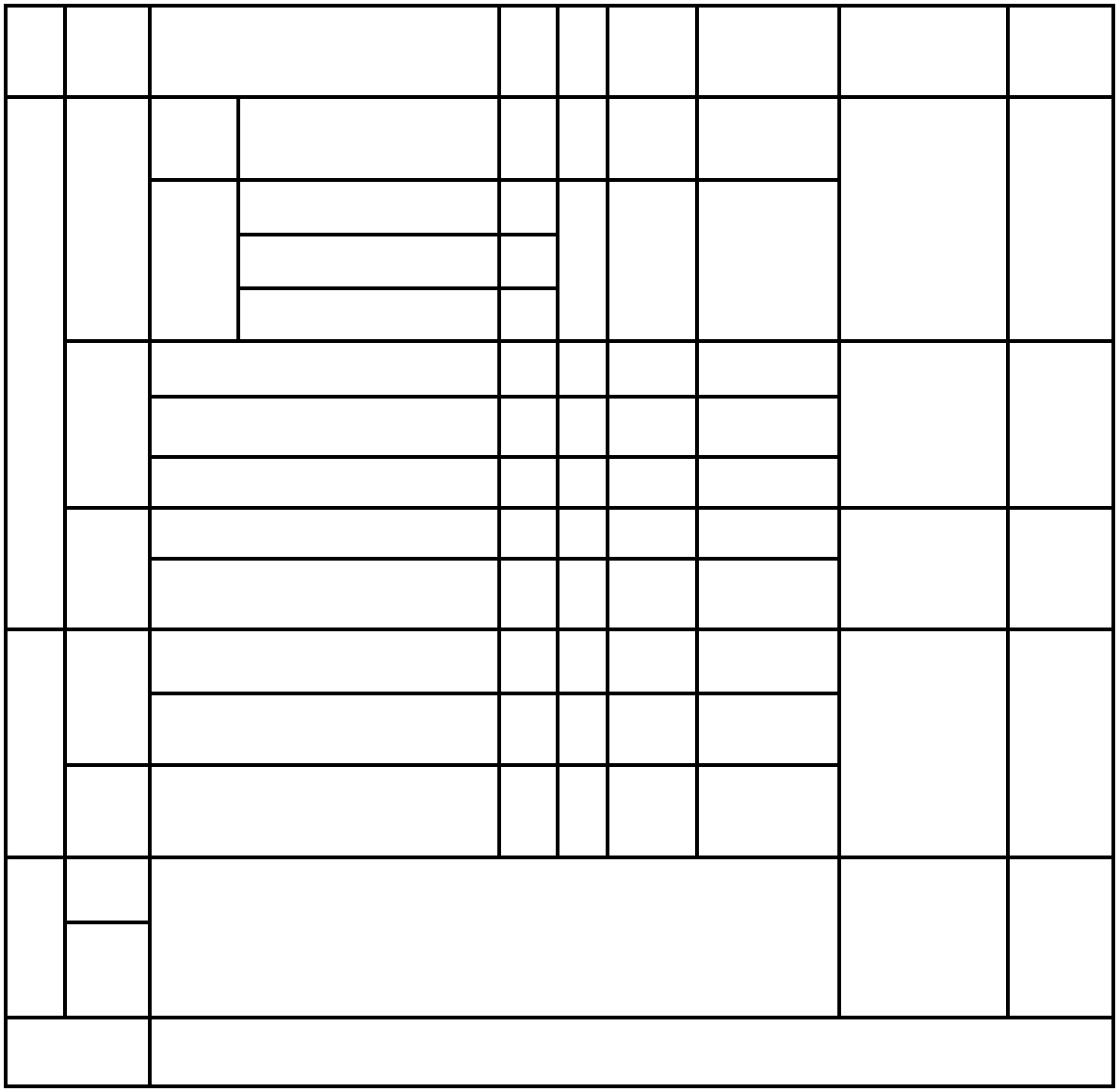
3

3 5 6

15 6

6 2

1



3 5

8

1

2

3

4

5

1

2

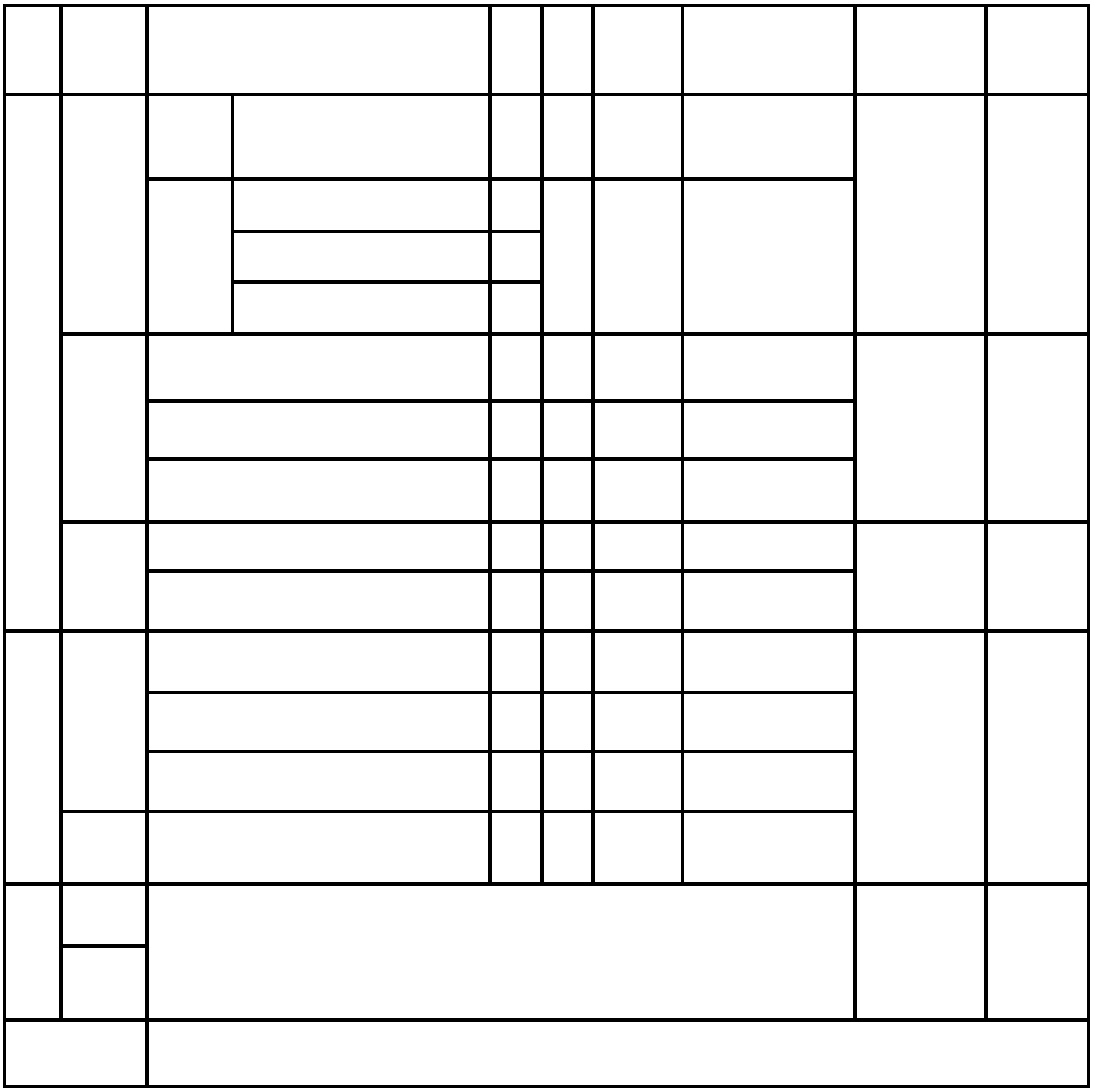
20

3 5 6

15

6 6

2 1



3 5

8

1

2

3

4

5

www.grs.ynu.edu.cn

1

2

3

4

3 5 6

15 6

6 2

1

8

1

2

3

4

5

www.grs.ynu.edu.cn

1

1

56

2

3 5 6

15 6

6 2

1

1

2

3

4

5

www.grs.ynu.edu.cn

1

2

3 5 6

16 6

6 3

1

1

2

3

4

5

www.grs.ynu.edu.cn

1

1840-1949

1

2

3

2

1840

1

19

2 20

3

4

3 5 6

16 6

6 3

1

8

1

2

3

4

5

www.grs.ynu.edu.cn

1

2

3 5 6

15 6

6 2

1

8

1

2

3

4

5

www.grs.ynu.edu.cn

1

2

3

4

5

50

3 5 6

18

6 6

2 3 1

3 5

8

1

4

5

www.grs.ynu.edu.cn

1

2

1 2

3

1 1 1

6

17

				36	2	1		
				36				
				36	4	1		6
				36				
				54	3			
				54	3			6
				36	2	1		
				36	2	2		
				36	2	2		2
				36	2	1		4
				36	2	2		
				36	2	4		
				36	2	3		
				36	2	4		
				36	2	3		
		18						
		8						(1)
		17						

1

3-5

2

3

18 8

1

, .

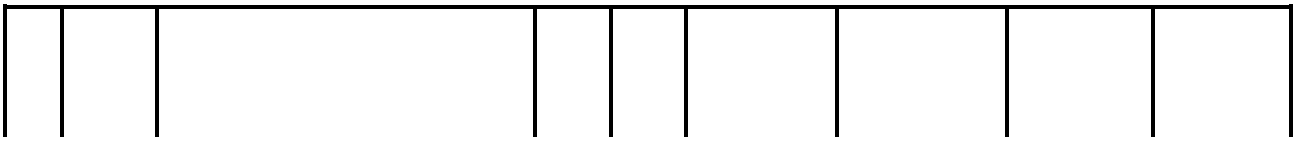
, ,

5

www.grs.ynu.edu.cn

M-

H- Schur



36 2 1

6

www.grs.ynu.edu.cn

			36	2	1		6	
			36	4	1			
			18					
			18					
			54	3	1		6	
			54	3	1			
			36	2	2		2	
			36	2	2			
			36	2	2			
			36	2	2			

		4					(1)	
		10						
	15							

www.grs.ynu.edu.cn

			36	2	1		6	
			36	4	1			
			36					
			36					
			54	3			6	
			54	3				
			36	2	2		2 4	
			36	2	2			
			36	2	2			
			36	2	3			
			36	2	1			
			36	2	2			
			36	2	1			
			36	2	2			
			36	2	3			
			36	2	3			
			36	2	4			

			36	2	3			
		18					1	
		8						
	17							

www.grs.ynu.edu.cn

			36	2	1			
			36	4	1		6	
			36					
			36					
			54	3				
			54	3			6	
			36	2	1			
			36	2	2			
			36	2	1			
			36	2	2		2	
			36	2	2		4	
		Banach	36	2	1			
			36	2	2			
			36	2	2			
			36	2	3			
			36	2	3			
			36	2	3			
			36	2	2			
			36	2	3			
			36	2	3			

		8	1	
		18		
	17			

www.grs.ynu.edu.cn

				36	2	1		
				36				
				36	4	1		6
				36				
		II		54	3	1		
				54	3	1		2
				54	3	1		6
				54	3	2		
				54	3	2		
				54	3	2		1
				54	3	2		3
				54	3	2		
				54	3	2		
				54	3	2		
				54	3	2		
				54	3	2		
		10			2			1
		16						

www.grs.ynu.edu.cn

				36	2	1		
				36	4	1		(6)
				36				
				36				
		II		54	3	1		
				54	3	1		2 (6)
				54	3	1		
				54	3	2		
				54	3	2		
				54	3	2		1 (3)
				54	3	2		
				54	3	2		
				54	3	2		
				54	3	2		
				54	3	2		
				54	3	2		
				54	3	2		

		10 2	(1)	
		16		

www.grs.ynu.edu.cn

			36	2	1		6	
			36	4	1			
			36					
			36					
			54	3	1		2	

863

973

1

(1)

(2)

(3) 3

2

3

3

1 SCI EI

1

2 1

3 1

www.grs.ynu.edu.cn

1

3-5 6

6 6 3

1

16

							2	

10 2

1 1

1

(1)

(2)

(3) 3

2

3

070301

3-5 6

				36	2	1		6	
				36	4	1			
				36					
				36					
				54	3	1		6	
				54	3	1			

			18	1	1		3	
			36	2	1			
		10 2					1	
		16						

,

10

2 1

1

2

3

4

5

www.grs.ynu.edu.cn

070302

1

2

3

3-5 6

				36	2	1		6	
				36	4	1			
				36					
				36					
				72	4	1		7	
				54	3	1			
				36	2	1		2	
		10		2				1	
		16							

1

2

1

2

3

4

5

www.grs.ynu.edu.cn

070303

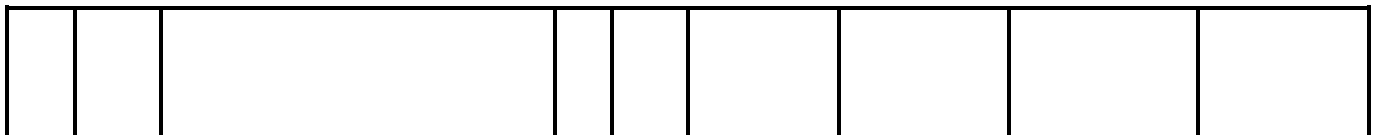
1

2

3

4

3-5 6



10

2 1

1

2

3

4

www.grs.ynu.edu.cn

070304

D•2’/2.X ÊDÔÌÀC80477<2DE4>l FA1<290<DB9 EMC19A 6/La501FC02C8 EM8045>-10M7EF/MCIDB841663419A0 EM89>>M

			36	2	1		6	
			36	4	1			
			36					
			36					
			54	3	1		5	
			36	2	1			
			36	2	1		4	
			36	2	1			
		10	2				1	
		16						

10

2 1

1

2

3

4

www.grs.ynu.edu.cn

070601

1

2

3

4

5

6

1

2

3

4

3 5 6

d

			36	2	1		6	
			36	4	1			
			36					
			36					
			54	3	1		6	
			54	3	2			
			36	2	2		2	
		10 3					1	
		15						

1

2

3

4

10

3 1

1

2

3

4

5 ( )

500

6

d

15 4 3

2 1 6 2 2 1 1

2

				36	2	1		
				36				
				36	4	1		6
				36				
				54	3	1		
				54	3	1		6
				36	2	1		2

		18	1	
		! , 2		
	15			

www.grs.ynu.edu.cn

16 4 3

2 1 6 2 3 1 1

2

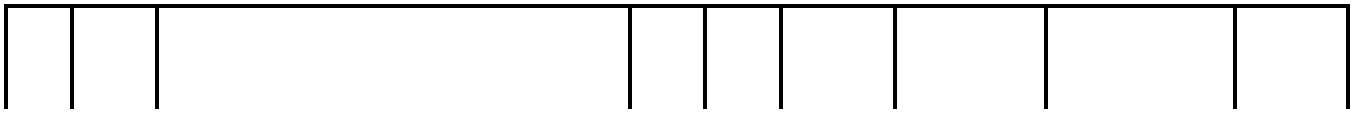
			36	2	1		6	
			36	4	1			
			36					
			36					
			54	3	1		6	
			54	3	1			
			54	3	1		3	
		18					1	
		! , 2						
	16							

www.grs.ynu.edu.cn

15 4 3

2 1 5 2 3 1 1

2



36 2 1

www.grs.ynu.edu.cn

16 4 3

2 1 6 2 3 1 1

2

			36	2	1		6	
			36	4	1			
			36					
			36					
			54	3	1		6	
			54	3	1			
			54	3	1		3	
		18					1	
		! , 2						
	16							

www.grs.ynu.edu.cn

www.grs.ynu.edu.cn

(Fossil-Lagerstatten)

16 4 3

2 1 6 2 3 1 1

2

0710Z2

1

2

3

, 3-5 6

:

1

10

www.grs.ynu.edu.cn

0710Z3

1

2

3

4

3-5 6

16 4 3

2 1 6 2 3 1 1

2

3-5 Ã

10

,

2

1

1

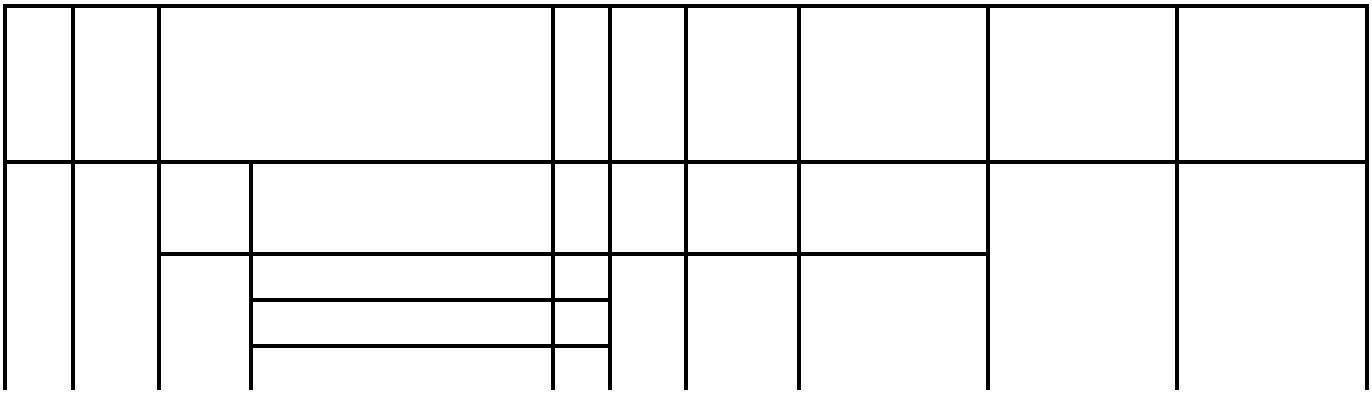
2

1

2

3

3-5 6



3~5

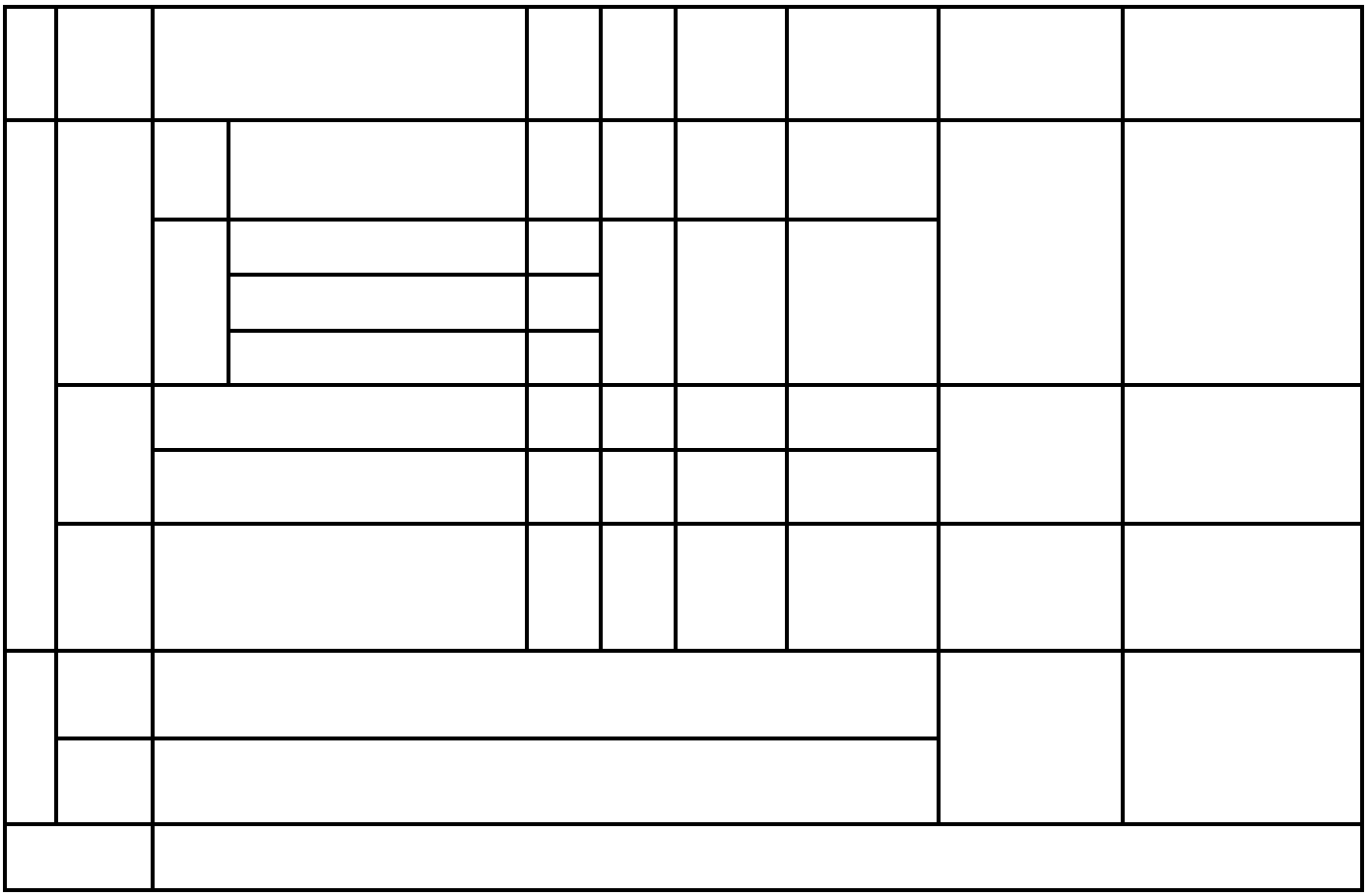
1

10 2

www.grs.ynu.edu.cn

15 4 3

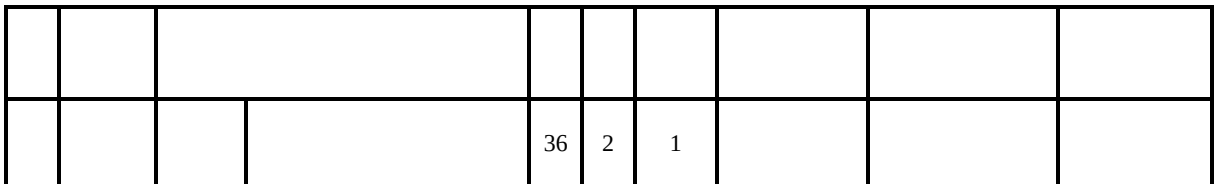
2 1 6 2 2 1 1 2



www.grs.ynu.edu.cn

15 4 2

6 2 1



36

6

4

www.grs.ynu.edu.cn

www.grs.ynu.edu.cn

0810

1

2

3

(1)

(2)

(3)

(4)

(5)

(6)

3

4

3-5

3-5

www.grs.ynu.edu.cn

www.grs.ynu.edu.cn

www.grs.ynu.edu.cn

www.grs.ynu.edu.cn