

# 「実験計画法と分散分析」(朝倉書店)

## 直交表

三輪哲久

- 1 2 水準系直交表
  - 1.1  $L_4(2^3)$  直交表
  - 1.2  $L_8(2^7)$  直交表
  - 1.3  $L_{16}(2^{15})$  直交表
  - 1.4  $L_{32}(2^{31})$  直交表
  - 1.5  $L_{64}(2^{63})$  直交表
- 2 3 水準系直交表
  - 2.1  $L_9(3^4)$  直交表
  - 2.2  $L_{27}(3^{13})$  直交表
  - 2.3  $L_{81}(3^{40})$  直交表

1 2水準系直交表

1.1  $L_4(2^3)$  直交表

| No.        | 列番号 |     |     |
|------------|-----|-----|-----|
|            | (1) | (2) | (3) |
| 1          | 1   | 1   | 1   |
| 2          | 1   | 2   | 2   |
| 3          | 2   | 1   | 2   |
| 4          | 2   | 2   | 1   |
| 列名<br>(成分) | $a$ | $b$ | $a$ |
| 群          | 1 群 | 2 群 |     |

1.2  $L_8(2^7)$  直交表

| No.        | 列番号 |     |     |     |     |     |     |
|------------|-----|-----|-----|-----|-----|-----|-----|
|            | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1          | 1   | 1   | 1   | 1   | 1   | 1   | 1   |
| 2          | 1   | 1   | 1   | 2   | 2   | 2   | 2   |
| 3          | 1   | 2   | 2   | 1   | 1   | 2   | 2   |
| 4          | 1   | 2   | 2   | 2   | 2   | 1   | 1   |
| 5          | 2   | 1   | 2   | 1   | 2   | 1   | 2   |
| 6          | 2   | 1   | 2   | 2   | 1   | 2   | 1   |
| 7          | 2   | 2   | 1   | 1   | 2   | 2   | 1   |
| 8          | 2   | 2   | 1   | 2   | 1   | 1   | 2   |
| 列名<br>(成分) | $a$ | $b$ | $b$ | $c$ | $c$ | $c$ | $c$ |
| 群          | 1 群 | 2 群 |     | 3 群 |     |     |     |

1.3  $L_{16}(2^{15})$  直交表

| No.        | 列番号 |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
|            | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
| 1          | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1    | 1    | 1    | 1    | 1    | 1    |
| 2          | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 2   | 2   | 2    | 2    | 2    | 2    | 2    | 2    |
| 3          | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 1   | 1   | 1    | 1    | 2    | 2    | 2    | 2    |
| 4          | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 2   | 2   | 2    | 2    | 1    | 1    | 1    | 1    |
| 5          | 1   | 2   | 2   | 1   | 1   | 2   | 2   | 1   | 1   | 2    | 2    | 1    | 1    | 2    | 2    |
| 6          | 1   | 2   | 2   | 1   | 1   | 2   | 2   | 2   | 2   | 1    | 1    | 2    | 2    | 1    | 1    |
| 7          | 1   | 2   | 2   | 2   | 2   | 1   | 1   | 1   | 1   | 2    | 2    | 2    | 2    | 1    | 1    |
| 8          | 1   | 2   | 2   | 2   | 2   | 1   | 1   | 2   | 2   | 1    | 1    | 1    | 1    | 2    | 2    |
| 9          | 2   | 1   | 2   | 1   | 2   | 1   | 2   | 1   | 2   | 1    | 2    | 1    | 2    | 1    | 2    |
| 10         | 2   | 1   | 2   | 1   | 2   | 1   | 2   | 2   | 1   | 2    | 1    | 2    | 1    | 2    | 1    |
| 11         | 2   | 1   | 2   | 2   | 1   | 2   | 1   | 1   | 2   | 1    | 2    | 2    | 1    | 2    | 1    |
| 12         | 2   | 1   | 2   | 2   | 1   | 2   | 1   | 2   | 1   | 2    | 1    | 1    | 2    | 1    | 2    |
| 13         | 2   | 2   | 1   | 1   | 2   | 2   | 1   | 1   | 2   | 2    | 1    | 1    | 2    | 2    | 1    |
| 14         | 2   | 2   | 1   | 1   | 2   | 2   | 1   | 2   | 1   | 1    | 2    | 2    | 1    | 1    | 2    |
| 15         | 2   | 2   | 1   | 2   | 1   | 1   | 2   | 1   | 2   | 2    | 1    | 2    | 1    | 1    | 2    |
| 16         | 2   | 2   | 1   | 2   | 1   | 1   | 2   | 2   | 1   | 1    | 2    | 1    | 2    | 2    | 1    |
| 列名<br>(成分) | $a$ | $b$ | $b$ | $c$ | $c$ | $c$ | $c$ | $d$ | $d$ | $d$  | $d$  | $c$  | $c$  | $c$  | $c$  |
| 群          | 1 群 | 2 群 |     | 3 群 |     |     |     | 4 群 |     |      |      |      |      |      |      |

#### 1.4 $L_{32}(2^{31})$ 直交表

| No.        | 列番号 |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |  |  |  |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|--|--|--|
|            | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) | (31) |     |     |  |  |  |
| 1          | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1   |     |  |  |  |
| 2          | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1    | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2   |     |  |  |  |
| 3          | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 2   | 2   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2   |     |  |  |  |
| 4          | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 2   | 2   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1   |     |  |  |  |
| 5          | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 1   | 1   | 1    | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2   |     |  |  |  |
| 6          | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 1   | 1   | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1   |     |  |  |  |
| 7          | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 2   | 2   | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1   |     |  |  |  |
| 8          | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 2   | 2   | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2   |     |  |  |  |
| 9          | 1   | 2   | 2   | 1   | 1   | 2   | 2   | 1   | 1   | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 2   |     |  |  |  |
| 10         | 1   | 2   | 2   | 1   | 1   | 2   | 2   | 1   | 1   | 2    | 2    | 1    | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 1   |     |  |  |  |
| 11         | 1   | 2   | 2   | 1   | 1   | 2   | 2   | 2   | 2   | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 2    | 2    | 2    | 1    | 1   |     |  |  |  |
| 12         | 1   | 2   | 2   | 1   | 1   | 2   | 2   | 2   | 2   | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2   |     |  |  |  |
| 13         | 1   | 2   | 2   | 2   | 2   | 1   | 1   | 1   | 1   | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 1   |     |  |  |  |
| 14         | 1   | 2   | 2   | 2   | 2   | 1   | 1   | 1   | 1   | 2    | 2    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2   |     |  |  |  |
| 15         | 1   | 2   | 2   | 2   | 2   | 1   | 1   | 2   | 2   | 1    | 1    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2   |     |  |  |  |
| 16         | 1   | 2   | 2   | 2   | 2   | 1   | 1   | 2   | 2   | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 1   |     |  |  |  |
| 17         | 2   | 1   | 2   | 1   | 2   | 1   | 2   | 1   | 2   | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1   |     |  |  |  |
| 18         | 2   | 1   | 2   | 1   | 2   | 1   | 2   | 1   | 2   | 1    | 2    | 1    | 2    | 1    | 2    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2   |     |  |  |  |
| 19         | 2   | 1   | 2   | 1   | 2   | 1   | 2   | 2   | 1   | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2   |     |  |  |  |
| 20         | 2   | 1   | 2   | 1   | 2   | 1   | 2   | 2   | 1   | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 2    | 1    | 2    | 1   |     |  |  |  |
| 21         | 2   | 1   | 2   | 2   | 1   | 2   | 1   | 1   | 2   | 1    | 2    | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 1    | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 1    | 2   |     |  |  |  |
| 22         | 2   | 1   | 2   | 2   | 1   | 2   | 1   | 1   | 2   | 1    | 2    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 2   |     |  |  |  |
| 23         | 2   | 1   | 2   | 2   | 1   | 2   | 1   | 2   | 1   | 2    | 1    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 1    | 2    | 1   |     |  |  |  |
| 24         | 2   | 1   | 2   | 2   | 1   | 2   | 1   | 2   | 1   | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 1    | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 2    | 1    | 2    | 1    | 2    | 2    | 1    | 2   |     |  |  |  |
| 25         | 2   | 2   | 1   | 1   | 2   | 2   | 1   | 1   | 2   | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 2   |     |  |  |  |
| 26         | 2   | 2   | 1   | 1   | 2   | 2   | 1   | 1   | 2   | 2    | 1    | 1    | 2    | 2    | 1    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 1   |     |  |  |  |
| 27         | 2   | 2   | 1   | 1   | 2   | 2   | 1   | 2   | 1   | 1    | 2    | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 1   |     |  |  |  |
| 28         | 2   | 2   | 1   | 1   | 2   | 2   | 1   | 2   | 1   | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 1    | 2    | 1    | 2    | 2    | 1    | 1    | 2    | 2   |     |  |  |  |
| 29         | 2   | 2   | 1   | 2   | 1   | 1   | 2   | 1   | 2   | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 1    | 2    | 2    | 1    | 2    | 1    | 1    | 2   |     |  |  |  |
| 30         | 2   | 2   | 1   | 2   | 1   | 1   | 2   | 1   | 2   | 2    | 1    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 1    | 2    | 1    | 2    | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 1    | 2   |     |  |  |  |
| 31         | 2   | 2   | 1   | 2   | 1   | 1   | 2   | 2   | 1   | 1    | 2    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 1   |     |  |  |  |
| 32         | 2   | 2   | 1   | 2   | 1   | 1   | 2   | 2   | 1   | 1    | 2    | 1    | 2    | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 1    | 1    | 2    | 2    | 1    | 2    | 1    | 1    | 2    | 2   |     |  |  |  |
| 列名<br>(成分) | $a$ |     | $a$ |     | $a$ |     | $a$ |     | $a$ |      | $a$  |      | $a$  |      | $a$  |      | $a$  |      | $a$  |      | $a$  |      | $a$  |      | $a$  |      | $a$  |      | $a$  |      | $a$  |     |     |  |  |  |
|            | $b$ |     | $b$ | $b$ |     | $b$ | $b$ | $b$ |     | $b$  | $b$  | $b$  |      | $b$  | $b$  | $b$  |      | $b$  | $b$  | $b$  |      | $b$  | $b$  | $b$  |      | $b$  | $b$  | $b$  |      | $b$  | $b$  |     |     |  |  |  |
|            | $c$ |     | $c$ | $c$ | $c$ | $c$ | $c$ |     | $c$ |      | $c$  | $c$  | $c$  | $c$  | $c$  |      | $c$  | $c$  | $c$  | $c$  | $c$  |      | $c$  | $c$  | $c$  | $c$  | $c$  |      | $c$  | $c$  | $c$  | $c$ |     |  |  |  |
|            | $d$ |     | $d$ | $d$ | $d$ | $d$ | $d$ | $d$ | $d$ | $d$  | $d$  | $d$  | $d$  | $d$  | $d$  |      | $d$  |      | $d$  | $d$  | $d$  | $d$  | $d$  | $d$  | $d$  | $d$  | $d$  | $d$  | $d$  | $d$  | $d$  | $d$ | $d$ |  |  |  |
| 群          | $e$ |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |  |  |  |
|            | $e$ |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |  |  |  |
|            | $e$ |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |  |  |  |
| 群          | 1 群 |     | 2 群 |     | 3 群 |     |     |     | 4 群 |      |      |      |      |      |      |      |      |      | 5 群  |      |      |      |      |      |      |      |      |      |      |      |      |     |     |  |  |  |



## 2 3水準系直交表

### 2.1 $L_9(3^4)$ 直交表

| No.        | 列番号 |     |     |       |
|------------|-----|-----|-----|-------|
|            | (1) | (2) | (3) | (4)   |
| 1          | 1   | 1   | 1   | 1     |
| 2          | 1   | 2   | 2   | 2     |
| 3          | 1   | 3   | 3   | 3     |
| 4          | 2   | 1   | 2   | 3     |
| 5          | 2   | 2   | 3   | 1     |
| 6          | 2   | 3   | 1   | 2     |
| 7          | 3   | 1   | 3   | 2     |
| 8          | 3   | 2   | 1   | 3     |
| 9          | 3   | 3   | 2   | 1     |
| 列名<br>(成分) | $a$ | $b$ | $a$ | $a^2$ |
| 群          | 1 群 | 2 群 |     |       |

### 2.2 $L_{27}(3^{13})$ 直交表

| No.        | 列番号 |     |     |       |     |     |     |     |     |      |       |       |       |
|------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|------|-------|-------|-------|
|            | (1) | (2) | (3) | (4)   | (5) | (6) | (7) | (8) | (9) | (10) | (11)  | (12)  | (13)  |
| 1          | 1   | 1   | 1   | 1     | 1   | 1   | 1   | 1   | 1   | 1    | 1     | 1     | 1     |
| 2          | 1   | 1   | 1   | 1     | 2   | 2   | 2   | 2   | 2   | 2    | 2     | 2     | 2     |
| 3          | 1   | 1   | 1   | 1     | 3   | 3   | 3   | 3   | 3   | 3    | 3     | 3     | 3     |
| 4          | 1   | 2   | 2   | 2     | 1   | 1   | 1   | 2   | 2   | 2    | 3     | 3     | 3     |
| 5          | 1   | 2   | 2   | 2     | 2   | 2   | 2   | 3   | 3   | 3    | 1     | 1     | 1     |
| 6          | 1   | 2   | 2   | 2     | 3   | 3   | 3   | 1   | 1   | 1    | 2     | 2     | 2     |
| 7          | 1   | 3   | 3   | 3     | 1   | 1   | 1   | 3   | 3   | 3    | 2     | 2     | 2     |
| 8          | 1   | 3   | 3   | 3     | 2   | 2   | 2   | 1   | 1   | 1    | 3     | 3     | 3     |
| 9          | 1   | 3   | 3   | 3     | 3   | 3   | 3   | 2   | 2   | 2    | 1     | 1     | 1     |
| 10         | 2   | 1   | 2   | 3     | 1   | 2   | 3   | 1   | 2   | 3    | 1     | 2     | 3     |
| 11         | 2   | 1   | 2   | 3     | 2   | 3   | 1   | 2   | 3   | 1    | 2     | 3     | 1     |
| 12         | 2   | 1   | 2   | 3     | 3   | 1   | 2   | 3   | 1   | 2    | 3     | 1     | 2     |
| 13         | 2   | 2   | 3   | 1     | 1   | 2   | 3   | 2   | 3   | 1    | 3     | 1     | 2     |
| 14         | 2   | 2   | 3   | 1     | 2   | 3   | 1   | 3   | 1   | 2    | 1     | 2     | 3     |
| 15         | 2   | 2   | 3   | 1     | 3   | 1   | 2   | 1   | 2   | 3    | 2     | 3     | 1     |
| 16         | 2   | 3   | 1   | 2     | 1   | 2   | 3   | 3   | 1   | 2    | 2     | 3     | 1     |
| 17         | 2   | 3   | 1   | 2     | 2   | 3   | 1   | 1   | 2   | 3    | 3     | 1     | 2     |
| 18         | 2   | 3   | 1   | 2     | 3   | 1   | 2   | 2   | 3   | 1    | 1     | 2     | 3     |
| 19         | 3   | 1   | 3   | 2     | 1   | 3   | 2   | 1   | 3   | 2    | 1     | 3     | 2     |
| 20         | 3   | 1   | 3   | 2     | 2   | 1   | 3   | 2   | 1   | 3    | 2     | 1     | 3     |
| 21         | 3   | 1   | 3   | 2     | 3   | 2   | 1   | 3   | 2   | 1    | 3     | 2     | 1     |
| 22         | 3   | 2   | 1   | 3     | 1   | 3   | 2   | 2   | 1   | 3    | 3     | 2     | 1     |
| 23         | 3   | 2   | 1   | 3     | 2   | 1   | 3   | 3   | 2   | 1    | 1     | 3     | 2     |
| 24         | 3   | 2   | 1   | 3     | 3   | 2   | 1   | 1   | 3   | 2    | 2     | 1     | 3     |
| 25         | 3   | 3   | 2   | 1     | 1   | 3   | 2   | 3   | 2   | 1    | 2     | 1     | 3     |
| 26         | 3   | 3   | 2   | 1     | 2   | 1   | 3   | 1   | 3   | 2    | 3     | 2     | 1     |
| 27         | 3   | 3   | 2   | 1     | 3   | 2   | 1   | 2   | 1   | 3    | 1     | 3     | 2     |
| 列名<br>(成分) | $a$ | $b$ | $b$ | $a^2$ | $c$ | $c$ | $c$ | $b$ | $b$ | $b$  | $b^2$ | $b^2$ | $b^2$ |
| 群          | 1 群 | 2 群 |     | 3 群   |     |     |     |     |     |      |       |       |       |

### 2.3 $L_{81}(3^{40})$ 直交表

| No. | 列番号 |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |   |   |   |   |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|---|---|---|---|---|
|     | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) |   |   |   |   |   |   |
| 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1 |   |   |   |   |   |
| 2   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2 | 2 |   |   |   |   |
| 3   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1    | 1    | 1    | 1    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3 | 3 |   |   |   |   |
| 4   | 1   | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 2   | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3 | 3 | 3 |   |   |   |
| 5   | 1   | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 2   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3 | 3 | 3 |   |   |   |
| 6   | 1   | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 2   | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 1    | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2 | 2 | 2 |   |   |   |
| 7   | 1   | 1   | 1   | 1   | 3   | 3   | 3   | 3   | 3   | 3    | 3    | 3    | 3    | 3    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3 | 3 | 3 |   |   |   |
| 8   | 1   | 1   | 1   | 1   | 3   | 3   | 3   | 3   | 3   | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3 | 3 | 3 |   |   |   |
| 9   | 1   | 1   | 1   | 1   | 3   | 3   | 3   | 3   | 3   | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 1    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3 | 3 | 3 |   |   |   |
| 10  | 1   | 2   | 2   | 2   | 1   | 1   | 1   | 2   | 2   | 2    | 3    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 2    | 2    | 3    | 3 | 3 | 3 | 3 |   |   |
| 11  | 1   | 2   | 2   | 2   | 1   | 1   | 1   | 2   | 2   | 2    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 2    | 2    | 3    | 3    | 3 | 3 | 3 | 3 |   |   |
| 12  | 1   | 2   | 2   | 2   | 1   | 1   | 1   | 2   | 2   | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 3    | 3    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 2 | 2 | 2 | 2 |   |   |
| 13  | 1   | 2   | 2   | 2   | 2   | 2   | 2   | 3   | 3   | 3    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 3    | 3    | 3    | 1    | 1    | 1    | 2    | 2 | 2 | 2 | 2 |   |   |
| 14  | 1   | 2   | 2   | 2   | 2   | 2   | 2   | 3   | 3   | 3    | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2 | 2 | 2 | 2 |   |   |
| 15  | 1   | 2   | 2   | 2   | 2   | 2   | 2   | 3   | 3   | 3    | 1    | 1    | 1    | 1    | 3    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3 | 3 | 3 | 3 | 3 |   |
| 16  | 1   | 2   | 2   | 2   | 3   | 3   | 3   | 1   | 1   | 1    | 2    | 2    | 2    | 2    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3 | 3 | 3 | 3 | 3 |   |
| 17  | 1   | 2   | 2   | 2   | 3   | 3   | 3   | 1   | 1   | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3 | 3 | 3 | 3 |   |   |
| 18  | 1   | 2   | 2   | 2   | 3   | 3   | 3   | 1   | 1   | 1    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3 | 3 | 3 | 3 | 3 |   |
| 19  | 1   | 3   | 3   | 3   | 1   | 1   | 1   | 3   | 3   | 3    | 2    | 2    | 2    | 2    | 1    | 1    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 1    | 1    | 3    | 3    | 3    | 2    | 2    | 2    | 1    | 1    | 3    | 3    | 3    | 2    | 2 | 2 | 2 | 2 |   |   |
| 20  | 1   | 3   | 3   | 3   | 1   | 1   | 1   | 3   | 3   | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 1    | 1    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2 | 2 | 2 | 2 |   |   |
| 21  | 1   | 3   | 3   | 3   | 1   | 1   | 1   | 3   | 3   | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 1    | 1    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2 | 2 | 2 | 2 |   |   |
| 22  | 1   | 3   | 3   | 3   | 2   | 2   | 2   | 1   | 1   | 1    | 3    | 3    | 3    | 3    | 1    | 1    | 1    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 1    | 1    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2 | 2 | 2 | 2 |   |   |
| 23  | 1   | 3   | 3   | 3   | 2   | 2   | 2   | 1   | 1   | 1    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 1    | 1    | 1    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 3    | 3    | 3    | 2    | 2    | 2 | 2 | 2 | 2 |   |   |
| 24  | 1   | 3   | 3   | 3   | 2   | 2   | 2   | 1   | 1   | 1    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2 | 2 | 2 | 2 | 2 |   |
| 25  | 1   | 3   | 3   | 3   | 3   | 3   | 3   | 2   | 2   | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 1    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 3    | 3    | 2    | 2    | 2    | 2    | 1    | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2 | 2 | 2 | 2 | 2 |   |
| 26  | 1   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 2   | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 2    | 2    | 2    | 1    | 1    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2 | 2 | 2 | 2 | 2 |   |
| 27  | 1   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 2   | 2    | 2    | 2    | 2    | 1    | 1    | 1    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 1    | 1    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3 | 3 | 3 | 3 | 3 |   |
| 28  | 2   | 1   | 2   | 3   | 1   | 2   | 3   | 1   | 2   | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1 | 2 | 3 | 1 | 2 | 3 |
| 29  | 2   | 1   | 2   | 3   | 1   | 2   | 3   | 1   | 2   | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1 | 2 | 3 | 1 | 2 | 3 |
| 30  | 2   | 1   | 2   | 3   | 1   | 2   | 3   | 1   | 2   | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1 | 2 | 3 | 1 | 2 | 3 |
| 31  | 2   | 1   | 2   | 3   | 2   | 3   | 1   | 2   | 3   | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3 | 1 | 2 | 3 | 1 | 2 |
| 32  | 2   | 1   | 2   | 3   | 2   | 3   | 1   | 2   | 3   | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2 | 3 | 1 | 2 | 3 | 1 |
| 33  | 2   | 1   | 2   | 3   | 2   | 3   | 1   | 2   | 3   | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2 | 3 | 1 | 2 | 3 | 1 |
| 34  | 2   | 1   | 2   | 3   | 3   | 1   | 2   | 3   | 1   | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3 | 1 | 2 | 3 | 1 | 2 |
| 35  | 2   | 1   | 2   | 3   | 3   | 1   | 2   | 3   | 1   | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3 | 1 | 2 | 3 | 1 | 2 |
| 36  | 2   | 1   | 2   | 3   | 3   | 1   | 2   | 3   | 1   | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3 | 1 | 2 | 3 | 1 | 2 |
| 37  | 2   | 2   | 3   | 1   | 1   | 2   | 3   | 2   | 3   | 1    | 3    | 1    | 2    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 1    | 2    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 1    | 2    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 2    | 3    | 1 | 3 | 1 | 2 | 3 |   |
| 38  | 2   | 2   | 3   | 1   | 1   | 2   | 3   | 2   | 3   | 1    | 3    | 1    | 2    | 2    | 3    | 1    | 3    | 1    | 2    | 1    | 3    | 2    | 3    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 1    | 2    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 2    | 3 | 1 | 3 | 2 | 3 |   |
| 39  | 2   | 2   | 3   | 1   | 1   | 2   | 3   | 2   | 3   | 1    | 3    | 1    | 2    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 1    | 3    | 2    | 3    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 1    | 2    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 2 | 3 | 1 | 3 | 2 | 3 |
| 40  | 2   | 2   | 3   | 1   | 2   | 3   | 1   | 3   | 1   | 2    | 1    | 2    | 3    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 1    | 2    | 2    | 3    | 1    | 3    | 1    | 2    | 2    | 3    | 1    | 3    | 1    | 2    | 2    | 3    | 3    | 1    | 2    | 2    | 3 | 1 | 3 | 2 | 3 |   |
| 41  | 2   | 2   | 3   | 1   | 2   | 3   | 1   | 3   | 1   | 2    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 1    | 2    | 1    | 3    | 2    | 3    | 1    | 2    | 3    | 2    | 3    | 1    | 2    | 2    | 3    | 3    | 1    | 2    | 2    | 3    | 3    | 1    | 2    | 2 | 3 | 1 | 3 | 2 | 3 |
| 42  | 2   | 2   | 3   | 1   | 2   | 3   | 1   | 3   | 1   | 2    | 1    | 2    | 3    | 3    | 1    | 2    | 1    | 2    | 3    | 1    | 2    | 3    | 2    | 3    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 1    | 2    | 2    | 3    | 3    | 1    | 2    | 2    | 3    | 1 | 3 | 2 | 3 | 1 |   |
| 43  | 2   | 2   | 3   | 1   | 3   | 1   | 2   | 1   | 2   | 3    | 2    | 3    | 1    | 1    | 2    | 3    | 2    | 3    | 1    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 2    | 3    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1    | 2    | 3    | 1 | 2 | 3 | 1 | 2 | 3 |
| 44  | 2   | 2   | 3   | 1   | 3   | 1   | 2   | 1   | 2   | 3    | 2    | 3    | 1    | 2    | 3    | 1    | 3    | 1    | 2    | 3    | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |   |   |   |   |   |