|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 585 | 599 | 592 | 599 | 588 | 595 | 594 | 597 | 595 | 597 | 594 | 595 | 594 | 599 | 592 | 599 |
| 411 | 525 | 456 | 515 | 475 | 519 | 490 | 522 | 428 | 519 | 479 | 503 | 464 | 534 | 478 | 530 |
| 2 | 6 | 2 | 2 | 2 | 7 | 5 | 4 | 1 | 5 | 4 | 5 | 1 | 4 | 1 | 7 |
| 3,3 | 6,2 | 2,8 | 4,1 | 2 | 6,3 | 9,6 | 5,3 | 4,9 | 6,6 | 5,7 | 6,6 | 1,8 | 4,8 | 4,3 | 6,8 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 591 | 599 | 592 | 599 | 594 | 595 | 587 | 599 | 594 | 594 | 592 | 599 | 590 | 597 | 592 | 599 |
| 444 | 536 | 492 | 531 | 490 | 550 | 446 | 503 | 494 | 521 | 480 | 539 | 486 | 532 | 449 | 525 |
| 2 | 3 | 15 | 4 | 1 | 2 | 2 | 8 | 2 | 2 | 1 | 4 | 4 | 1 | 14 | 6 |
| 2,5 | 5,7 | 4,6 | 6,7 | 2,3 | 8,3 | 3,9 | 5,8 | 6,9 | 4,1 | 5,3 | 7,4 | 3,5 | 4,9 | 7,7 | 5,8 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 595 | 599 | 588 | 599 | 587 | 597 | 594 | 599 | 595 | 599 | 597 | 599 | 592 | 599 | 592 | 599 |
| 476 | 481 | 455 | 526 | 431 | 490 | 475 | 519 | 445 | 525 | 472 | 515 | 461 | 526 | 486 | 480 |
| 1 | 7 | 3 | 14 | 3 | 4 | 4 | 13 | 2 | 8 | 2 | 7 | 3 | 9 | 2 | 3 |
| 10,6 | 4,4 | 2,9 | 8,1 | 2,1 | 6 | 11,3 | 8 | 7,4 | 6,3 | 5,3 | 8,3 | 2,4 | 8,7 | 5,4 | 5 |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 570 | 574 | 569 | 570 | 563 | 574 | 570 | 570 | 563 | 574 | 561 | 574 | 560 | 574 | 565 | 574 |
| 425 | 495 | 431 | 490 | 478 | 461 | 415 | 504 | 475 | 486 | 435 | 513 | 470 | 493 | 431 | 506 |
| 3 | 8 | 2 | 9 | 1 | 4 | 1 | 3 | 2 | 4 | 35 | 7 | 2 | 3 | 2 | 5 |
| 2,9 | 5,2 | 4,1 | 5,3 | 1,9 | 5,2 | 5,1 | 4,4 | 2 | 6,2 | 16,5 | 6,2 | 2,2 | 6 | 5 | 5,7 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 570 | 574 | 562 | 574 | 564 | 570 | 569 | 574 | 568 | 574 | 570 | 574 | 562 | 574 | 561 | 570 |
| 435 | 479 | 390 | 495 | 471 | 510 | 445 | 504 | 422 | 490 | 500 | 500 | 485 | 501 | 453 | 495 |
| 3 | 5 | 2 | 5 | 3 | 6 | 2 | 8 | 1 | 5 | 1 | 6 | 2 | 9 | 2 | 5 |
| 3,5 | 7 | 5,7 | 6,3 | 2,4 | 5,9 | 2,2 | 8,2 | 8,4 | 5,8 | 9,2 | 7,7 | 2 | 4 | 3,7 | 5,4 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 562 | 574 | 568 | 574 | 569 | 570 | 567 | 570 | 570 | 574 | 565 | 574 | 563 | 574 | 574 | 574 |
| 424 | 487 | 448 | 508 | 430 | 483 | 463 | 476 | 455 | 479 | 440 | 505 | 470 | 484 | 466 | 505 |
| 2 | 2 | 3 | 4 | 3 | 6 | 11 | 5 | 15 | 5 | 2 | 4 | 3 | 2 | 2 | 3 |
| 7 | 6,7 | 3,6 | 5,7 | 2,4 | 8,5 | 3,5 | 5,4 | 4,5 | 6,2 | 7 | 8,3 | 2,1 | 7 | 2,6 | 5,6 |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 683 | 683 | 682 | 682 | 680 | 684 | 682 | 684 | 680 | 684 | 683 | 682 | 684 | 684 | 682 | 684 |
| 544 | 609 | 530 | 584 | 556 | 565 | 553 | 565 | 522 | 618 | 526 | 585 | 418 | 584 | 530 | 573 |
| 12 | 5 | 1 | 3 | 1 | 3 | 39 | 5 | 18 | 9 | 2 | 5 | 4 | 12 | 2 | 5 |
| 6,3 | 8,6 | 8,7 | 6,4 | 5,4 | 3,8 | 13,1 | 5,4 | 5,4 | 7,7 | 8,5 | 8,5 | 2,4 | 5,3 | 6 | 6,5 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 680 | 684 | 682 | 684 | 682 | 683 | 672 | 684 | 684 | 682 | 680 | 684 | 683 | 683 | 684 | 683 |
| 540 | 622 | 537 | 587 | 514 | 615 | 513 | 589 | 557 | 602 | 535 | 566 | 581 | 594 | 514 | 579 |
| 2 | 4 | 22 | 11 | 4 | 12 | 3 | 5 | 9 | 3 | 3 | 5 | 3 | 8 | 4 | 6 |
| 11,2 | 7 | 6,9 | 6,9 | 2,4 | 5,9 | 6,3 | 7,1 | 9,2 | 6,1 | 2,9 | 5,8 | 2,3 | 6,4 | 4,3 | 6,4 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 684 | 683 | 670 | 684 | 682 | 684 | 677 | 683 | 675 | 683 | 680 | 684 | 673 | 684 | 673 | 684 |
| 535 | 585 | 552 | 620 | 526 | 597 | 540 | 579 | 545 | 592 | 564 | 606 | 559 | 587 | 519 | 589 |
| 1 | 4 | 2 | 6 | 3 | 10 | 1 | 4 | 2 | 6 | 2 | 6 | 3 | 4 | 2 | 2 |
| 5,6 | 6,6 | 4,7 | 5,6 | 2,3 | 7,2 | 2,3 | 8,3 | 4 | 5,5 | 3,4 | 4,9 | 2,6 | 7,7 | 6,1 | 6,8 |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 483 | 490 | 495 | 490 | 473 | 495 | 488 | 495 | 491 | 495 | 491 | 495 | 481 | 495 | 491 | 495 |
| 403 | 414 | 405 | 430 | 355 | 446 | 417 | 445 | 361 | 441 | 394 | 446 | 354 | 434 | 383 | 390 |
| 8 | 2 | 2 | 8 | 3 | 5 | 8 | 5 | 33 | 7 | 7 | 5 | 2 | 3 | 2 | 1 |
| 9,1 | 5,6 | 4,6 | 6,9 | 2,3 | 5,8 | 6,4 | 5,3 | 7,7 | 8 | 6,9 | 5,8 | 2,3 | 6,1 | 4,9 | 6,1 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 487 | 495 | 484 | 495 | 490 | 495 | 489 | 495 | 486 | 495 | 495 | 495 | 486 | 495 | 490 | 495 |
| 382 | 426 | 372 | 422 | 400 | 437 | 314 | 441 | 416 | 419 | 397 | 420 | 402 | 427 | 381 | 420 |
| 1 | 4 | 2 | 9 | 3 | 4 | 3 | 3 | 2 | 8 | 2 | 4 | 3 | 3 | 34 | 6 |
| 4,6 | 7,2 | 2,6 | 7,3 | 2,5 | 7,7 | 2,3 | 6,3 | 3,6 | 5,6 | 2,1 | 4,8 | 2,3 | 5,9 | 8,9 | 7 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 479 | 495 | 489 | 495 | 485 | 495 | 479 | 495 | 489 | 495 | 495 | 495 | 485 | 495 | 484 | 495 |
| 358 | 408 | 372 | 430 | 379 | 440 | 389 | 430 | 388 | 424 | 404 | 433 | 405 | 400 | 400 | 415 |
| 2 | 3 | 2 | 9 | 2 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 6 | 3 | 5 |
| 4,1 | 4,3 | 9,8 | 7,3 | 2,1 | 4,6 | 4,2 | 4,8 | 7,8 | 7,5 | 3,5 | 9,2 | 2 | 6,7 | 3 | 7,6 |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 629 | 656 | 628 | 653 | 651 | 656 | 653 | 653 | 643 | 656 | 637 | 651 | 626 | 656 | 656 | 656 |
| 533 | 540 | 516 | 578 | 469 | 589 | 482 | 564 | 502 | 557 | 511 | 555 | 520 | 593 | 551 | 560 |
| 2 | 5 | 3 | 5 | 2 | 3 | 2 | 4 | 10 | 5 | 3 | 19 | 2 | 8 | 12 | 9 |
| 9,6 | 8,1 | 2,1 | 5,6 | 3,1 | 4,2 | 11,2 | 6,4 | 7,9 | 6,6 | 5,3 | 10,3 | 2,1 | 6,8 | 4,4 | 6,9 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 651 | 656 | 643 | 656 | 656 | 656 | 656 | 656 | 656 | 656 | 643 | 656 | 656 | 656 | 656 | 656 |
| 466 | 547 | 537 | 562 | 458 | 577 | 510 | 547 | 433 | 522 | 488 | 588 | 538 | 568 | 537 | 593 |
| 3 | 8 | 1 | 4 | 3 | 12 | 3 | 4 | 28 | 7 | 5 | 5 | 3 | 6 | 2 | 14 |
| 9,3 | 6,7 | 2,1 | 7,4 | 1,8 | 8,1 | 7 | 5,5 | 8 | 9,1 | 10,8 | 11,3 | 2,9 | 6 | 7,8 | 10,5 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 643 | 656 | 653 | 656 | 631 | 656 | 631 | 656 | 653 | 656 | 640 | 656 | 641 | 656 | 651 | 656 |
| 489 | 559 | 512 | 556 | 525 | 574 | 562 | 550 | 549 | 561 | 554 | 574 | 518 | 546 | 564 | 577 |
| 4 | 6 | 1 | 8 | 2 | 5 | 2 | 4 | 3 | 10 | 35 | 3 | 2 | 3 | 7 | 14 |
| 8,3 | 8,8 | 7,3 | 10,1 | 2,4 | 6,8 | 6,1 | 6 | 4,4 | 6,8 | 7 | 6,5 | 2,2 | 6,5 | 6,3 | 9,9 |