|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 |
| 708 | 721 | 683 | 721 | 719 | 721 | 721 | 721 | 719 | 721 | 710 | 721 | 721 | 721 | 721 | 721 |
| 452 | 567 | 402 | 555 | 504 | 534 | 539 | 519 | 477 | 535 | 488 | 520 | 503 | 555 | 473 | 554 |
| 7 | 5 | 2 | 3 | 5 | 3 | 3 | 1 | 3 | 4 | 4 | 7 | 3 | 4 | 2 | 4 |
| 11,9 | 7,7 | 7,5 | 7,7 | 2,8 | 6,9 | 8,9 | 5,1 | 10,3 | 5,5 | 4,9 | 10,4 | 3 | 6,9 | 10,6 | 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 |
| 704 | 721 | 721 | 721 | 721 | 721 | 717 | 721 | 717 | 721 | 697 | 721 | 662 | 721 | 675 | 721 |
| 449 | 474 | 523 | 538 | 491 | 476 | 512 | 515 | 482 | 498 | 487 | 520 | 520 | 532 | 494 | 558 |
| 2 | 1 | 4 | 5 | 3 | 6 | 4 | 6 | 4 | 6 | 27 | 5 | 1 | 4 | 40 | 5 |
| 7,1 | 5,9 | 7,7 | 9,3 | 3 | 7,1 | 6,7 | 6,5 | 10,8 | 9 | 9,4 | 11,1 | 1,9 | 7,3 | 10,4 | 7,8 |
| 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 |
| 721 | 721 | 721 | 721 | 681 | 721 | 717 | 721 | 704 | 721 | 721 | 721 | 721 | 721 | 717 | 721 |
| 443 | 513 | 517 | 576 | 495 | 513 | 451 | 518 | 512 | 571 | 519 | 529 | 539 | 530 | 534 | 525 |
| 3 | 4 | 4 | 5 | 2 | 4 | 5 | 5 | 2 | 3 | 3 | 3 | 3 | 5 | 3 | 5 |
| 4,8 | 6,8 | 6,3 | 7,4 | 2,6 | 8,3 | 11 | 5,5 | 5,6 | 5,5 | 6,8 | 7,5 | 2,4 | 7,2 | 3,5 | 6,2 |
| 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 |
| 554 | 578 | 551 | 578 | 552 | 578 | 578 | 578 | 578 | 578 | 578 | 578 | 554 | 578 | 578 | 578 |
| 381 | 448 | 396 | 420 | 418 | 426 | 418 | 419 | 415 | 406 | 380 | 419 | 418 | 432 | 343 | 435 |
| 2 | 2 | 33 | 3 | 3 | 5 | 13 | 4 | 4 | 7 | 1 | 4 | 2 | 4 | 3 | 3 |
| 19,8 | 8,6 | 14 | 6,7 | 2,4 | 7,8 | 11 | 9,6 | 8,4 | 8 | 4,6 | 7,4 | 2,2 | 6,6 | 12,4 | 7,6 |
| 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 |
| 554 | 578 | 578 | 578 | 563 | 578 | 578 | 578 | 578 | 578 | 552 | 578 | 561 | 578 | 578 | 578 |
| 362 | 370 | 414 | 394 | 389 | 460 | 355 | 448 | 382 | 431 | 363 | 397 | 416 | 425 | 379 | 425 |
| 3 | 5 | 4 | 4 | 4 | 4 | 29 | 5 | 4 | 5 | 3 | 5 | 4 | 8 | 2 | 7 |
| 5,4 | 6,7 | 5,2 | 7,5 | 6 | 6,7 | 18,5 | 6,4 | 10,1 | 7,3 | 6,7 | 6,8 | 2,6 | 7,2 | 12,4 | 6,7 |
| 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 |
| 578 | 578 | 563 | 578 | 550 | 578 | 578 | 578 | 578 | 578 | 563 | 578 | 561 | 578 | 578 | 578 |
| 333 | 437 | 423 | 401 | 413 | 416 | 385 | 413 | 369 | 434 | 341 | 422 | 384 | 423 | 360 | 423 |
| 6 | 5 | 2 | 4 | 3 | 4 | 21 | 5 | 4 | 4 | 6 | 4 | 3 | 3 | 2 | 4 |
| 8 | 8,4 | 16 | 8,5 | 2,9 | 7,9 | 13,7 | 9,2 | 11,4 | 7,3 | 3,5 | 6,1 | 2,8 | 5,5 | 4,9 | 6,1 |
| 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 |
| 641 | 647 | 647 | 647 | 641 | 647 | 640 | 647 | 634 | 647 | 640 | 647 | 614 | 647 | 647 | 647 |
| 439 | 476 | 429 | 486 | 466 | 500 | 412 | 492 | 400 | 495 | 437 | 503 | 486 | 494 | 473 | 490 |
| 3 | 5 | 13 | 5 | 2 | 4 | 31 | 5 | 11 | 5 | 4 | 5 | 2 | 3 | 5 | 1 |
| 17,4 | 6,5 | 13,4 | 7 | 2,8 | 7,6 | 16,7 | 7,3 | 14 | 7,6 | 7,9 | 5,9 | 2,5 | 6,9 | 17,4 | 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 |
| 647 | 647 | 641 | 647 | 638 | 647 | 647 | 647 | 641 | 647 | 641 | 641 | 647 | 647 | 638 | 647 |
| 408 | 481 | 474 | 485 | 421 | 481 | 421 | 513 | 352 | 442 | 478 | 476 | 466 | 493 | 448 | 499 |
| 2 | 4 | 5 | 5 | 3 | 6 | 3 | 4 | 2 | 5 | 7 | 3 | 3 | 4 | 5 | 4 |
| 14,6 | 5,9 | 6,3 | 10,3 | 2,3 | 7 | 5,1 | 6,4 | 15,1 | 9,1 | 7,8 | 5,1 | 3 | 7,2 | 5,1 | 10 |
| 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 |
| 647 | 647 | 641 | 647 | 634 | 647 | 641 | 647 | 647 | 647 | 638 | 647 | 641 | 647 | 641 | 647 |
| 417 | 459 | 465 | 478 | 464 | 483 | 433 | 446 | 485 | 470 | 452 | 436 | 497 | 501 | 438 | 469 |
| 31 | 4 | 4 | 6 | 3 | 5 | 38 | 6 | 5 | 4 | 6 | 5 | 4 | 6 | 17 | 4 |
| 15,9 | 10,5 | 7,2 | 9,9 | 2,1 | 8,1 | 13,1 | 7,4 | 7,7 | 6,5 | 5,3 | 8,2 | 3,1 | 8,2 | 6,8 | 6,7 |
| 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 |
| 837 | 861 | 861 | 861 | 861 | 861 | 837 | 861 | 861 | 861 | 809 | 861 | 837 | 861 | 828 | 861 |
| 570 | 667 | 578 | 665 | 554 | 652 | 575 | 664 | 552 | 631 | 588 | 633 | 592 | 671 | 599 | 582 |
| 3 | 6 | 2 | 3 | 3 | 6 | 2 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 4 |
| 9 | 7,5 | 5,2 | 7,9 | 2,3 | 7,2 | 7,1 | 7,1 | 4,7 | 6,9 | 8,8 | 7 | 4 | 7,1 | 10,7 | 7,8 |
| 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 |
| 800 | 861 | 800 | 861 | 861 | 861 | 830 | 861 | 837 | 861 | 837 | 861 | 861 | 861 | 830 | 861 |
| 625 | 656 | 566 | 634 | 616 | 637 | 530 | 651 | 538 | 654 | 569 | 612 | 596 | 637 | 514 | 670 |
| 2 | 2 | 2 | 4 | 3 | 4 | 4 | 5 | 9 | 6 | 3 | 5 | 3 | 4 | 36 | 5 |
| 6,9 | 6,2 | 4,2 | 6,1 | 2,9 | 6,2 | 5 | 7,5 | 7,6 | 6,7 | 7,7 | 7,3 | 2,7 | 6,4 | 16,1 | 6 |
| 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 |
| 781 | 861 | 823 | 861 | 837 | 861 | 805 | 861 | 828 | 861 | 837 | 861 | 837 | 861 | 861 | 861 |
| 554 | 638 | 519 | 638 | 546 | 616 | 583 | 644 | 457 | 638 | 524 | 589 | 576 | 626 | 597 | 649 |
| 3 | 6 | 3 | 4 | 3 | 5 | 2 | 4 | 4 | 2 | 2 | 3 | 2 | 4 | 3 | 5 |
| 7 | 7,8 | 9,2 | 6,8 | 3,1 | 7,4 | 3,9 | 7,9 | 8,7 | 7,1 | 6,5 | 7 | 2,3 | 6 | 6,4 | 8,5 |
| 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 |
| 834 | 843 | 843 | 843 | 824 | 843 | 843 | 843 | 815 | 843 | 843 | 843 | 843 | 843 | 834 | 843 |
| 548 | 581 | 555 | 634 | 536 | 627 | 543 | 650 | 463 | 643 | 569 | 616 | 549 | 634 | 507 | 648 |
| 26 | 1 | 3 | 3 | 2 | 6 | 2 | 5 | 23 | 3 | 3 | 5 | 4 | 3 | 3 | 5 |
| 11,5 | 7,3 | 10,2 | 6,1 | 3,1 | 8,1 | 10,2 | 5,8 | 5,1 | 5,5 | 6,1 | 7,7 | 3,2 | 6,7 | 11 | 7,3 |
| 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 |
| 843 | 843 | 817 | 843 | 834 | 843 | 829 | 843 | 788 | 843 | 832 | 843 | 817 | 843 | 832 | 843 |
| 557 | 595 | 484 | 638 | 516 | 605 | 558 | 602 | 532 | 628 | 622 | 661 | 524 | 584 | 539 | 596 |
| 2 | 5 | 3 | 3 | 3 | 4 | 3 | 4 | 20 | 7 | 3 | 8 | 4 | 5 | 3 | 6 |
| 8,3 | 7,1 | 6,5 | 6 | 2,6 | 7 | 8 | 7 | 13,7 | 6,7 | 15,4 | 7 | 2,8 | 8,2 | 7,4 | 6,6 |
| 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 |
| 832 | 843 | 829 | 843 | 843 | 843 | 787 | 843 | 834 | 843 | 843 | 843 | 824 | 843 | 812 | 843 |
| 577 | 599 | 546 | 625 | 524 | 615 | 553 | 608 | 531 | 617 | 567 | 645 | 520 | 621 | 531 | 617 |
| 2 | 6 | 20 | 3 | 2 | 6 | 9 | 5 | 2 | 4 | 3 | 5 | 2 | 4 | 21 | 6 |
| 4,2 | 7,3 | 10,2 | 7,3 | 2,8 | 6,4 | 9,5 | 6,5 | 9,7 | 7,8 | 8 | 6,4 | 2,4 | 7,4 | 13,7 | 6,9 |