|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 |
| 724 | 730 | 715 | 730 | 714 | 730 | 730 | 724 | 730 | 730 | 721 | 730 | 724 | 730 | 723 | 730 |
| 543 | 663 | 562 | 617 | 628 | 632 | 599 | 627 | 506 | 671 | 569 | 649 | 630 | 625 | 577 | 634 |
| 2 | 12 | 1 | 1 | 3 | 2 | 4 | 8 | 30 | 9 | 2 | 7 | 2 | 3 | 1 | 3 |
| 10,5 | 7,8 | 2,5 | 4,7 | 2 | 5,6 | 10,3 | 7,4 | 13,8 | 9,1 | 2,7 | 7 | 2,1 | 6,7 | 9 | 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 |
| 727 | 724 | 723 | 730 | 727 | 730 | 730 | 730 | 720 | 724 | 730 | 730 | 721 | 730 | 730 | 724 |
| 559 | 664 | 592 | 669 | 576 | 628 | 615 | 658 | 621 | 636 | 647 | 639 | 561 | 647 | 611 | 621 |
| 3 | 5 | 1 | 5 | 1 | 5 | 12 | 2 | 16 | 5 | 2 | 10 | 1 | 2 | 27 | 10 |
| 8,6 | 5,5 | 2,3 | 10,3 | 2,8 | 9,3 | 3 | 5,1 | 8,6 | 11,6 | 2,7 | 6,8 | 2,5 | 5,2 | 7,2 | 6,3 |
| 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 |
| 724 | 730 | 724 | 730 | 730 | 730 | 730 | 724 | 730 | 730 | 724 | 730 | 724 | 730 | 721 | 730 |
| 568 | 647 | 573 | 637 | 622 | 591 | 588 | 666 | 526 | 648 | 632 | 653 | 545 | 606 | 560 | 649 |
| 2 | 7 | 2 | 2 | 1 | 7 | 3 | 4 | 4 | 9 | 10 | 3 | 2 | 4 | 24 | 10 |
| 7,4 | 7,8 | 6,5 | 7,5 | 1,7 | 8,4 | 9,6 | 6,1 | 4,5 | 7 | 4,5 | 4,8 | 2,1 | 7,8 | 9,7 | 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 |
| 759 | 772 | 756 | 768 | 764 | 772 | 768 | 772 | 769 | 772 | 768 | 772 | 761 | 772 | 759 | 772 |
| 627 | 670 | 635 | 677 | 627 | 646 | 673 | 650 | 590 | 711 | 601 | 695 | 653 | 665 | 614 | 687 |
| 10 | 8 | 37 | 6 | 3 | 5 | 1 | 1 | 2 | 1 | 2 | 12 | 1 | 9 | 4 | 3 |
| 14,2 | 7,3 | 5,8 | 4,6 | 2,3 | 4 | 6,5 | 5 | 6,1 | 4,7 | 3,2 | 7,7 | 1,5 | 7,6 | 6,9 | 5,9 |
| 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 |
| 759 | 768 | 756 | 769 | 760 | 768 | 765 | 772 | 765 | 765 | 755 | 772 | 760 | 768 | 762 | 769 |
| 562 | 666 | 602 | 698 | 635 | 704 | 525 | 672 | 614 | 694 | 662 | 689 | 656 | 661 | 553 | 661 |
| 2 | 6 | 39 | 2 | 2 | 5 | 3 | 6 | 33 | 2 | 1 | 36 | 9 | 2 | 2 | 13 |
| 2,4 | 6 | 6,8 | 6,2 | 3,3 | 7,2 | 6 | 6,3 | 13,8 | 5,5 | 9,7 | 6,6 | 2,6 | 4 | 6,8 | 6,3 |
| 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 |
| 772 | 772 | 762 | 772 | 772 | 772 | 761 | 772 | 772 | 772 | 768 | 772 | 765 | 768 | 762 | 768 |
| 582 | 701 | 618 | 700 | 597 | 686 | 638 | 697 | 567 | 671 | 528 | 673 | 557 | 661 | 609 | 677 |
| 3 | 6 | 21 | 6 | 2 | 7 | 3 | 4 | 2 | 9 | 1 | 11 | 2 | 3 | 2 | 5 |
| 3,5 | 6,7 | 7,5 | 6,5 | 2 | 5,9 | 3,2 | 5 | 5,9 | 8,6 | 4 | 7 | 1,9 | 7,6 | 2,2 | 5,9 |
| 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 |
| 800 | 800 | 800 | 800 | 800 | 800 | 800 | 801 | 800 | 801 | 800 | 801 | 800 | 801 | 801 | 801 |
| 609 | 715 | 610 | 710 | 625 | 720 | 644 | 712 | 656 | 715 | 638 | 756 | 678 | 695 | 603 | 677 |
| 29 | 4 | 4 | 2 | 2 | 1 | 2 | 6 | 26 | 3 | 3 | 6 | 2 | 4 | 4 | 4 |
| 8,7 | 7,7 | 11 | 4,5 | 2,2 | 4,9 | 3,8 | 6 | 7,1 | 5,4 | 2,4 | 6,2 | 4,8 | 5,1 | 2,3 | 6,3 |
| 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 |
| 799 | 801 | 800 | 800 | 801 | 800 | 800 | 801 | 799 | 800 | 801 | 801 | 800 | 800 | 797 | 800 |
| 665 | 699 | 611 | 702 | 634 | 694 | 712 | 695 | 625 | 627 | 625 | 744 | 645 | 742 | 630 | 692 |
| 3 | 4 | 3 | 3 | 2 | 2 | 2 | 4 | 2 | 1 | 1 | 4 | 1 | 2 | 2 | 1 |
| 5,4 | 6,4 | 5,3 | 6,8 | 2,2 | 6,2 | 9,8 | 4,6 | 5,2 | 4,6 | 9,6 | 5 | 1,9 | 4,6 | 4,6 | 6,8 |
| 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 |
| 794 | 801 | 800 | 801 | 799 | 800 | 799 | 800 | 800 | 801 | 799 | 800 | 800 | 800 | 792 | 801 |
| 659 | 711 | 658 | 706 | 659 | 632 | 667 | 679 | 648 | 733 | 663 | 681 | 611 | 705 | 647 | 711 |
| 1 | 1 | 1 | 4 | 3 | 1 | 3 | 2 | 3 | 7 | 8 | 3 | 2 | 2 | 6 | 5 |
| 4,6 | 5,4 | 5,3 | 6 | 2,2 | 4,9 | 4,3 | 4,5 | 8,3 | 7,1 | 9,2 | 5,8 | 3,2 | 5,2 | 2,8 | 4,6 |
| 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 |
| 727 | 728 | 717 | 728 | 708 | 728 | 717 | 728 | 727 | 728 | 710 | 727 | 720 | 718 | 720 | 727 |
| 560 | 643 | 588 | 642 | 590 | 627 | 569 | 649 | 579 | 623 | 602 | 653 | 543 | 680 | 555 | 654 |
| 24 | 3 | 17 | 3 | 2 | 4 | 1 | 4 | 4 | 3 | 24 | 4 | 2 | 15 | 30 | 5 |
| 13,8 | 5,5 | 5,6 | 7 | 2 | 6,8 | 5,7 | 5,6 | 8,3 | 5,7 | 3,7 | 6,6 | 2,9 | 5,4 | 7,9 | 5,3 |
| 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 |
| 728 | 728 | 727 | 727 | 717 | 722 | 717 | 727 | 715 | 728 | 717 | 722 | 708 | 728 | 715 | 728 |
| 589 | 604 | 579 | 608 | 499 | 643 | 573 | 659 | 630 | 657 | 547 | 653 | 557 | 586 | 572 | 625 |
| 38 | 1 | 2 | 4 | 4 | 4 | 1 | 6 | 2 | 10 | 1 | 10 | 1 | 3 | 6 | 5 |
| 11,4 | 4,8 | 3,8 | 6,3 | 2,7 | 6,6 | 3,3 | 4,8 | 4,5 | 8,9 | 5,8 | 5,5 | 4,3 | 4,5 | 6,4 | 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 |
| 720 | 722 | 717 | 728 | 717 | 728 | 728 | 717 | 727 | 727 | 717 | 728 | 722 | 728 | 720 | 728 |
| 602 | 661 | 613 | 663 | 609 | 657 | 580 | 614 | 582 | 644 | 546 | 611 | 415 | 636 | 509 | 658 |
| 2 | 4 | 22 | 4 | 2 | 8 | 11 | 3 | 12 | 2 | 1 | 7 | 3 | 7 | 2 | 6 |
| 5,6 | 5,2 | 7,8 | 6,4 | 2,8 | 5,7 | 5 | 6,1 | 9,2 | 5,8 | 2,3 | 6,3 | 2,3 | 6 | 2,5 | 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 |
| 680 | 694 | 694 | 694 | 682 | 689 | 685 | 694 | 685 | 694 | 682 | 689 | 689 | 689 | 685 | 694 |
| 529 | 603 | 604 | 598 | 553 | 585 | 576 | 626 | 590 | 612 | 597 | 607 | 548 | 622 | 471 | 609 |
| 3 | 6 | 9 | 12 | 2 | 4 | 27 | 6 | 21 | 6 | 2 | 5 | 2 | 6 | 3 | 8 |
| 5,6 | 5,7 | 5,3 | 5,7 | 1,8 | 6,4 | 12,1 | 5,2 | 7,9 | 12 | 5,2 | 7,1 | 1,8 | 5,3 | 6,6 | 6,4 |
| 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 |
| 681 | 694 | 694 | 689 | 680 | 694 | 689 | 694 | 689 | 694 | 689 | 687 | 675 | 689 | 689 | 689 |
| 491 | 571 | 556 | 622 | 595 | 583 | 533 | 613 | 531 | 610 | 563 | 639 | 541 | 588 | 560 | 587 |
| 2 | 4 | 8 | 4 | 2 | 4 | 2 | 11 | 33 | 14 | 2 | 8 | 5 | 5 | 31 | 5 |
| 11,5 | 7,3 | 5,8 | 9,6 | 2,1 | 6,5 | 9,9 | 5,9 | 10 | 16,8 | 9 | 6,2 | 2,2 | 6,5 | 9 | 5,6 |
| 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 |
| 687 | 687 | 675 | 694 | 680 | 694 | 694 | 694 | 694 | 694 | 694 | 694 | 682 | 689 | 686 | 694 |
| 576 | 602 | 528 | 644 | 558 | 596 | 527 | 611 | 555 | 614 | 551 | 608 | 513 | 618 | 528 | 617 |
| 11 | 3 | 35 | 7 | 5 | 12 | 3 | 5 | 36 | 5 | 3 | 9 | 3 | 3 | 3 | 3 |
| 12,1 | 5,6 | 5,5 | 7,8 | 1,9 | 7,8 | 7,3 | 9,2 | 11,3 | 7,3 | 11,2 | 8,3 | 3,7 | 5,4 | 9,3 | 9,5 |