

Unit 8 - Week 6

Course outline

How does an NPTEL online course work?

Week 0 Assignment 0

Week 1

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Week 6

 Lecture 26: Concept of domination

 Lecture 27: Non-Pareto based approaches to solve MOOPs

 Lecture 28: Non-Pareto based approaches to solve MOOPs (Contid.)

 Lecture 29: Pareto-Based approaches to solve MOOPs

 Lecture 30: Pareto-based approaches to solve MOOPs (contid..)

 Lecture material of Week 6

 Quiz : Week 6 Assignment 6

 Week 6 Feedback Form

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Detail Solution

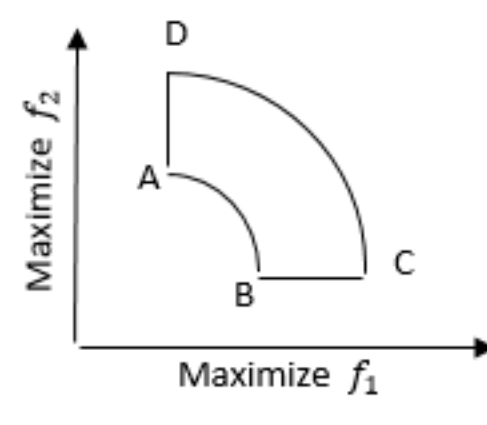
Live Interactive Session

Week 6 Assignment 6

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-11, 23:59 IST.

1) A solution space for a 2-objective optimization problem is shown in the following graph. 1 point



All trade-off solutions lie in the front

- AB
- CD
- AB + AD
- BC + CD

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

2) Which of the following solution is non-Pareto based a posteriori technique? 1 point

- SOEA.
- MOGA.
- VEGA.
- Lexicographic ordering.

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

3) A three-objective optimizations are solved using a MOEA algorithm and a few objective vectors are listed below.
(Assume all objectives are to be minimized) 1 point

[3, 5, 10], [5, 3, 10], [3, 10, 5], [10, 5, 3], [10, 3, 5]. Which of the following is true?

- All are non-dominating solutions.
- Solution [3, 5, 10] dominates all other solution.
- Solution [10, 5, 3] dominated by the solution [3, 5, 10].
- Solution [3, 10, 5] dominates solution [5, 3, 10].

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

4) Which of the following Pareto-based techniques to solve a MOOP follows **ranking** followed by **fitness averaging**? 1 point

- MOGA.
- NPGA.
- NSGA.
- VEGA.

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

5) Which of the following MOEA techniques follows Tournament selection strategy? 1 point

- Lexicographic ordering.
- MOGA.
- NPGA.
- NSGA.

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

6) Niche counts of two solutions x_1 and x_2 are 10, 20. This means that 1 point

- x_1 is surrounded by more neighbors than that of x_2 .
- x_1 is surrounded by less neighbors than that of x_2 .
- x_1 would be less desirable to provide population diversity.
- x_2 would be more preferable to provide population diversity.

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

7) Which of the following statement is not correct? 1 point

- A set of solutions is called trade-off solutions, which lie on the Pareto optimal front.
- A solution is called a trade-off solution, if it is not dominated by any other solution in the solution space.
- A front is called Pareto-optimal front on which all optimal solutions lie.
- A front containing a non-dominated set of solutions obtained over an exhaustive search space is called Pareto optimal front.

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

8) VEGA follows which selection strategy to select sub-population? 1 point

- Rank-based selection
- Tournament selection
- Steady-state selection
- Roulette wheel selection

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

9) Which is true for the dominance relation? 0 points

- It is reflexive
- It is anti-symmetric
- It is transitive
- It is not a partially order relation

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

10) Which of following leads to premature convergence? 1 point

- MOGA
- VEGA
- NPGA
- NSGA

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

11) A priori high level information that is required in **Lexicographic ordering** is 1 point

- The scalar weights of each objective function.
- The descending ordering of the rank of the importance of objective functions.
- Independent of objective function
- None of the above

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

12) If c_1 and c_2 are two offspring chromosomes, then according to NPGA, c_1 will be preferable to be selected for mating pool if 1 point

- if c_1 's niche count is higher than that of c_2 .
- if c_1 's niche count is equal to niche count of c_2 .
- if c_1 's niche count is lower than that of c_2 .
- None of the above

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

13) Which of the following MOEA technique follows weighted sum approach? 1 point

- Lexicographic ordering.
- VEGA
- MOGA
- SOEA

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

14) A solution x_i is said to dominate another solution x_j if 1 point

- x_i is worse than x_j and x_j is strictly better than x_i .
- x_i is no worse than x_j and x_i is strictly better than x_j in at least one objective.
- x_j is no worse than x_i and x_j is lesser than x_j in at least one objective.
- x_j is worse than x_i and x_i is lesser than x_j in at least one objective.

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

15) Which of the following technique suffers from **speciation** problem? 1 point

- MOEA
- VEGA
- NPGA
- NSGA

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.