CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Metaheuristic Optimization

Lab 2: NP-Completeness

1. This problem concerns the proof of the NP-completeness of 3-SAT

   a) Convert the formula

   F = (x V p) Λ (-x V y V z V -p) Λ (-y V q V -z)

   into a 3SAT formula, using the construction/reduction

   b) Find a truth a solution for the 3SAT instance of F and verify that it is a solution for the original problem.

2. This problem concerns the proof of the NP-completeness of 3COL

   a) Convert the formula

   F= (x V p V -y) Λ (-x V y V z) Λ (-y V q V -z)

   into a 3COL graph

   b) Find a solution for the 3COL instance of F and verify that it is a solution for the original problem.