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AN ALGORITHM FOR SOLVING A CAPACITATED INDEFINITE QUADRATIC TRANSPORTATION PROBLEM WITH ENHANCED FLOW

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Abstract: The present paper discusses enhanced flow in a capacitated indefinite quadratic transportation problem. Sometimes, situations arise where either reserve stocks have to be kept at the supply points say, for emergencies, or there may be extra demand in the markets. In such situations, the total flow needs to be controlled or enhanced. In this paper, a special class of transportation problems is studied, where the total transportation flow is enhanced to a known specified level. A related indefinite quadratic transportation problem is formulated, and it is shown that to each basic feasible solution called corner feasible solution to related transportation problem, there is a corresponding feasible solution to this enhanced flow problem. The optimal solution to enhanced flow problem may be obtained from the optimal solution to the related transportation problem. An algorithm is presented to solve a capacitated indefinite quadratic transportation problem with enhanced flow. Numerical illustrations are also included in support of the theory. Computational software GAMS is also used.

Keywords: Capacitated transportation problem, enhanced flow, quadratic transportation problem, software GAMS.

MSC: 90B06.