2.3.3 Abilities and limitation of ABC

The abilities of ABC algorithm may possibly include the following (Rao et al, 2008; Karaboga N., 2009; Benala et al, 2009; Akay and Karaboga, 2010; Karaboga D. and Akay, 2009; Rao and Pawar, 2010; Akay and Karaboga, 2009):

i.   ABC algorithm does not need external parameters such as cross over rate and mutation rate as in GA and DE.

ii.   ABC algorithm introduces neighbourhood source production mechanism which is the same as mutation process.

iii.   ABC algorithm has less computation time required and offered optimal solution due to its excellent global and local search capability.

iv.   the probability of falling into the local optimum is low in ABC algorithm because of the combination of local and global search.

v.   ABC algorithm only employs fewer control parameters.

vi.   the convergance rate of ABC algorithm is very high and only requires a little iteration for convergence to the optimal solution.

vii.   ABC algorithm combines both stochastic selection scheme and greedy selection scheme.

viii. ABC algorithm does not need big number of colony size to solve optimization problems with high dimensions.

The limitations of ABC may perhaps include the following (Kurban and Besdok, 2009; Pei et al, 2009; Saeedi et al, 2009):

i.   slow convergance rate.

ii.   the artificial bee, can only move straight to one of the nectar sources of those are discovered by the employed bees.

iii.   the number of tunable parameters it employs.