CHAPTER 7: CONCLUSIONS AND FUTURE SCOPE

7.1 Introduction

Genetic Algorithm (GA) is efficient method for solving complex engineering problems, and for simulating natural systems in a wide variety of scientific fields. The purpose of this thesis is to present a well-organized optimisation framework for the selection of different parameters in pipe network service operations.

7.2 Conclusion

1. The proposed numerical technique is efficient in handling different types of water and slurry pipe network including settling and non-settling slurry particles. The technique is based on Genetic Algorithm (GA) and applied to the problem on the transport of liquid and solid liquid mixture through pipeline.
2. Objective function, with multiple and discrete variables of network systems, is optimized which leads to optimal solutions for selection of pipe, size of pipe of different materials for best performance and at optimum cost.
3. On the basis of optimal solution, a new design table for selection of different parameters of pipe network system has been proposed here for practicing engineers.

7.3 Future Scope

This thesis leads to a number of prospects for future research. Some of the possible directions for future research are presented here:

1. This optimisation technique can be used for more comprehensive analyses to examine the impact of uncertain financial, pipe aging, water demand, hydraulic, and other variables on the system costs and energy use of networks. It is expected that the approach will open the door to new and efficient techniques to handle many complex nonlinear optimisation problems in the real world.

2. The use of MATLAB programs for optimisation of pipe network analysis can also be modify to allow designers to obtain answer for many questions that naturally occur during the design process e.g., the capacity of pump produce to maintain a prescribed pressure and or discharge at the far end of the network may be judged. Also, the discharge from the junction may be calculated, if the pressure is known from measurement.