Chapter Six

Conclusions and Recommendations

6.1. CONCLUSIONS

In chapters four and five, the calculations were performed on the Joule-Brayton cycle thermodynamic model and the results that obtained from the model were shown. The results show that the following conclusions:

- 1. The differences in results obtained from the thermodynamic model compared with the results obtained from previous studies are not too considerable.
- The effect of isentropic efficiency for both of compressor and turbine on the net power is considerable, and in case of isentropic efficiency 0.7 the net power decreases for pressure ratio above 8 approximately.
- 3. The effect of isentropic efficiency for both of compressor and turbine on the specific fuel consumption is not considerable for isentropic efficiency 0.8 and 0.9, but in case of isentropic efficiency 0.7 the specific fuel consumption is relatively high.
- 4. The effect of isentropic efficiency for both of compressor and turbine on the thermal efficiency is same like that effect on the net power because the amount of heat added is constant.
- 5. Novicov's efficiency for the cycle is close to the thermal efficiency at isentropic efficiency 0.9. Thus we can assume the Novicov's efficiency is the thermal efficiency for cycle with isentropic compression and expansion processes.
- 6. We canbenefit from these results that have been obtained from this thermodynamic model in the design of the gas turbine.

6.2. RECOMMENDATIONS

According to the conclusions that mentioned previously, we will recommend the following:

- 1. Find a proper equations for heat losses and friction losses and study the effect of these losses on the performance of the cycle.
- 2. Applying these thermodynamic model assumptions into programs that simulate the enginework and comparing the results obtained from the simulation with the results that obtained from this model.