Chapter Six

Conclusions and Recommendations

6.1. CONCLUSIONS

In chapters four and five, the calculations were performed on the diesel 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 experiments are not too considerable.

2. The both of compression and expansion efficiencies do not cause a considerable influence on the output power and the thermal efficiency.

3. Heat loss has a significant effect on the thermal efficiency, where we find that the difference between the highest thermal efficiency corresponding to the heat leakage coefficient 0.4 kJ/kg.K and the highest thermal efficiency without heat loss (i.e. heat leakage coefficient equal zero) is about 12% and this is significant value.

4. Friction loss has no considerable effect on the output power and the thermal efficiency such as the effect of both of compression and expansion efficiencies.

5. Cut-off ratio variation does not have considerable effect on the both of output power and the thermal efficiency, where we find the variation in the maximum values of output power corresponding to maximum and minimum values of cut-off ratio does not exceed 5 kW, also similarly for the thermal efficiency the variation in the maximum values corresponding to maximum and minimum values of cut-off ratio does not exceed4%.

6. We canbenefit from theseresultsthat have beenobtained from thisthermodynamic modelin the design ofthe engine.

6.2. RECOMMENDATIONS

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

1. Applyingthese thermodynamic model assumptionsinto programs thatsimulate theenginework and comparing the resultsobtainedfromthe simulationwiththe results that obtained from this model.

2. Thespecific heatsequations, whichdepending on the temperaturevariation must bemore precisein order tobe athermodynamic modelas close as possibleto reality.

3. The lossesthat occurin the enginemust be determined accuratelyso as to getmore accurate results.