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 exceed 4%.
6. We can benefit from these results that have been obtained from this thermodynamic model in the design of the engine.

6.2. RECOMMENDATIONS

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

1. Applying these thermodynamic model assumptions into programs that simulate the engine work and comparing the results obtained from the simulation with the results that obtained from this model.

2. The specific heat equations, which depending on the temperature variation must be more precise in order to be a thermodynamic model as close as possible to reality.

3. The losses that occur in the engine must be determined accurately so as to get more accurate results.