The maximum page allowed for this work is 10 pages. All extra work that you need to show must be included in the

appendix.

Aim

• To Design a steam power plant that is efficient.

• To Implement and apply the knowledge obtained from the course in improving the efficiency

of the system.

Assignment Brief

1. Design a steam power cycle that can achieve a cycle efficiency of at least 40 percent under

conditions that all turbines have isentropic efficiencies of 80 percent and all pumps have

isentropic efficiencies of 65 percent. Prepare an engineering report describing your design.

Your design should include the following,

a. Discussions of various cycles attempted to meet the goal as well as the positive and

negative aspects of your design.

b. System figures and T-s diagrams with labelled states and temperature, pressure,

enthalpy and entropy information for your design.

c. Show at least one sample calculation for each new system implemented.

d. If you are using programming language for the generation of more data, you are

expected to attach the code or programme as an appendix. Programmes such as

MATLAB, EXCEL and EES (Engineering Equation Solver) might be used for this

purpose.

2. Early commercial vapor power plants operated with turbine inlet conditions of about 12 bar

and 200oC. Plants are under development today that can operate at over 34 MPa, with turbine

inlet temperatures of 650oC or higher. How have steam generator or turbine designs changed

over the years to allow for such increases in pressure and temperature? Discuss. (800 -1500

words maximum)