IE2111 ISE Principles & Practice II
Assignment #2
Date Due: Tuesday, 13 February 2024, 5 pm

Instructions

You may use Excel or any computing tools for your calculations, but you must explain or show relevant formulas or equations in your solutions. Submit your completed assignment anytime into the Drop Box outside the ISEM Department Office at E1A-06-25, or to the professor at the end of lecture.

Question:

A company is considering in acquiring a local Waste-to-Energy plant which produces electricity for the energy market by burning wastes collected from the community. The investment will cost the company an initial cost of $16 million which will be funded by taking a 5-year bank loan at an interest rate of 8% per year. The loan will be repaid with 5 equal end-of-year payments. Annual profits from the sales of electricity generated by the plant to the power grid are estimated to be $2 million in years 1 to 10, and $3 million in years 11 to 20. All cash flows are assumed to occur at the end of each year. The plant has a useful life of 20 years with a salvage value of $500,000. The company *MARR* is 10%.

(*a*) What is the annual repayment amount for the bank loan? (2 marks)

(*b*) Draw a cash flow diagram for the project indicating all the cash flows at the end of each years. (5 marks)

(*c*) What is the *Present Worth* of the project? Is the project economically feasible? (3 marks)

(*d*) What is the *IRR* of the project? (3 marks)

(*e*) What is the *MIRR* of the project if the financing rate is 8% and the reinvestment rate is10%? (3 marks)

(*f*) What is the discounted pay-back period of the project? (4 marks)