IE2140 Engineering Economy
Tutorial #10 (Capital Financing)

Question 1 (based on Sullivan *et a*l 2020, P5-1)

A company is considering investing in the following five independent projects. Assume that all the projects have equal life and consist of only an initial cash outflow and a single cash inflow at the end of their life.

	A	*B*	*C*	*D*	*E*	*F*
Capital investment (millions)	\$10	\$25	\$30	\$30	\$5	\$12
Annual rate of profit (%)	15	5	6	7.5	12	4

(***a***) If the company has \$50 million available, and these funds are currently earning 5.5% interest annually from municipal bonds, which projects should the company invest in, and what would be its *MARR*?

(***b***) If the company has \$100 million available, and these funds are currently earning 5.5% interest annually from municipal bonds, which projects should the company invest in, and what would be its *MARR*?

Question 2 (based on Sullivan *et a*l 2020, P5-10)

What is the maximum price you will pay for a bond with a face value of \$1,000 and a coupon rate of 14% paid annually, if you want a yield to maturity of 10%? Assume that the bond will mature in 10 years, and the first payment will be received in one year.

Question 3 (based on Sullivan *et a*l 2020, P5-15)

A company sold a \$1,000,000 issue of bonds with a 15-year life, paying 4% interest per year. The bonds were sold at par value. If the company paid a selling fee of \$50,000 and has an annual expense of \$70,256 for mailing and record keeping, what is the true rate of interest that the company is paying for the borrowed money?

Question 4 (based on Sullivan *et a*l 2020, P5-14)

A company issues 5,000 bonds to raise funds. Each bond has a face value of \$1,000 and pays a coupon of 6% of its face value every year. The bonds can be redeemed after ten years. If investors expect a yield of 8% on holding the bond till maturity,

(***a***) What will be the quoted price of the bond?

(***b***) How much money will the company raise through the bond sale?

(***c***) What is the after-tax cost of capital to the company for this bond sale if the corporate tax rate is 17%?

Question 5 (based on Blank and Tarquin, 2012 P10.21, modified)

The cash flow plan associated with a debt financing transaction allowed a company to receive \$2,800,000 now in lieu of future payments of \$196,000 per year for 10 years plus a lump sum of \$2,800,000 in year 10. Determine the company's

(*a*) Before-tax cost of debt capital.

(*b*) After taxes if the corporate tax rate is 17%.