※ 考生請注意：本試題 ☑可　□不可　使用計算機

*All cash flows diagrams should be clearly illustrated.

1. Please answer the following questions:
   1.1. Can we compare alternatives by maximizing IRRs (internal Rate of Return) only? Why? (5%)
   1.2. What are the loss and gain on the disposal of the asset in terms of tax, respectively? (5%)

2. How much can be paid for $5,000, 10% bond, with interest paid semiannually, if the bond matures 12 years hence? Assume that the purchaser will be satisfied with 6% nominal interest compounded semiannually. (10%)

3. You bought a new car which was on a 4 year mortgage of NT$500,000 from the Interstate bank. The Interstate bank asked you to pay back the loan by monthly payments on 12 % nominal interest rate. You have made payments one year.
   3.1. What is the monthly payment that you are asked to make? (5%)
   3.2. What is the remaining principal? (10%)
   3.3. A new bank offers you a 3 year deal of refinancing your car with 6% nominal interest rate, compounding monthly. However, a set up change would cost you NT$10,000. Will you move your mortgage to the new bank? How long should you stay with the Interstate bank, if your MARR is 0.75% per month? (15%)

4. The board of a residential community wishes to establish a fund at the end of 2005 that by the end of year 2022 will grow to an amount large enough to place new elevators for its own 3 buildings. Each building has two elevators operated. A new elevator is estimated to cost NT $2M in 2020. In 2020, two new elevators will be installed in one of the three buildings. Another building will have new elevators in 2021 at the cost of NT$2.1M each elevator. The last building will be re-elevatored in 2022 at cost of NT$2.2M each. The annual effective interest rate that can be earned on this fund is 3%. How much money each year should be saved starting at the end of 2006 to pay all new elevators? (15%)

5. A contractor is considering the purchase of a set of machine tools at a cost of $30,000. The purchase is expected to generate profits of $14,500 (revenues less expenses) per year in each of the next 4 years. Additional profits will be taxed at a rate of 40%. The asset is depreciated by Straight-Line method with zero salvage value. The contractor's real after-tax MARR is 20%
   5.1. What is the PW of this investment? Should the contractor purchase the machine tools? (10%)
   5.2. What is the PW of this investment if the general inflation is 5% during each of the nest 4 years? Should the contractor purchase the machine tools? (10%)

6. ABC營造公司擁有一重型牽引機，其現有市場價值為$80,000，而根據二手市場資訊，預測此一資產未來三年的市場價值分別為$76,000、$60,000、$40,000，現今每年的花費是$18,000而且預計將每年增加4.1%。假設MARR是10%，現有最佳的取代方案之經濟年限(Economic Life)為 6年，而此取代方案最小的等值平均年成本(EUAC)為$44,210。根據上述資訊，你應於何時置換此一資產 (15%)

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To Find:	Given:	Factor by Which to Multiply "Given"	Factor Name	Factor Functional Symbol
For single cash flows:				
F	P	$(1+i)^N$	Single payment compound amount	(F/P, i%, N)
P	F	$\dfrac{1}{(1+i)^N}$	Single payment present worth	(P/F, i%, N)
For uniform series(annuities):				
F	A	$\dfrac{(1+i)^N-1}{i}$	Uniform series compound amount	(F/A, i%, N)
P	A	$\dfrac{(1+i)^N-1}{i(1+i)^N}$	Uniform series present worth	(P/A, i%, N)
A	F	$\dfrac{i}{(1+i)^N-1}$	Sinking fund	(A/F, i%, N)
A	P	$\dfrac{i(1+i)^N}{(1+i)^N-1}$	Capital recovery	(A/P, i%, N)