85

Midterm Examination #2 (45 minutes)
Allowed material: Interest table, pages of formulas and a calculator

Problem 1 (25%): A ranch is offered in Mexico with a 15 year mortgage at 40% compounded annually, and a 20% down payment (i.e. 80% of the cost will be financed with a loan). Annual payments are to be made for the loan. The cost of the ranch is 5 million pesos.

25

(a)   What yearly payment is required?

(b)   Now suppose that the nominal rate of interest is 40% with monthly compounding and monthly payments are required. What is the monthly payment?

Problem 2 (25 points, 5 points will be given for each right answer, Note: 2 points will be deducted for each wrong answer). Mark each statement *True* (T) or *False* (F), and fill in the blanks in part (e).

18

(a)   Suppose r = 10% is the nominal interest rate compounded continuously. Then the equivalent annual effective rate, i, will always be such that r < i.   F

(b)   A certain loan involves monthly repayments of $185 over a 24-month period. If r = 12% per year, more than half of the principal is still owed on this loan immediately after the *tenth* monthly payments is made.   T

(c) $1791 ten years from now is equivalent to $900 now if the nominal interest rate is 8% compounded semi-annually.   F

(d)   The factor $(P / A, i\%, n)$ equals $n \cdot (P / F, i\%, 1)$.   F

(e)   Fill in the missing interest factor (just the factor, not a formula)

$$(P / A, i\%, n) \times (F / P, i, n) = (F / A, i\%, n)$$

Problem 3 (25 points)

Suppose you invest $10,000 in an account that pays a nominal rate of interest of 12% compounded monthly.

18

(a)   How much can you withdraw-- in equal amounts-- over the next 4 years? See the cash flow diagram below.

W= ?

1   2   3   4   time

P=$10,000   i =12%
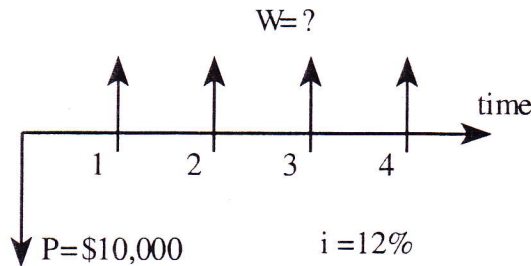
(b)   Suppose now, that during the second year, you wish to make *two* withdrawals: once every six months. What will be the level of these two withdrawals during the second year (so that they are equivalent to the withdrawal at the end of second year as calculated in part (a))?

(c)   During the third year, you wish to make *three* withdrawals: once every 4 months. What will be the level of these three withdrawals during the third year (so that they are equivalent to the withdrawal at the end of third year as calculated in part (a))?

Problem 4 (25 points)

Consider a project with the following cash flows:

Time	Amount ($)
0	-3020
1	5000
2	-5000
3	8000
4	-5000

24

(a)   What is the NPV at an interest rate of 5%?

(b)   Find IRR for the cash flows. How many IRRs are there? What feature in the cash flows suggests that there may be more than one IRR in this case?