

**TO RECEIVE CREDIT YOU MUST CLEARLY SHOW ALL YOUR WORK. YOU MAY NOT JUST LIST THE CALCULATOR BUTTONS YOU PRESSED.**

[1] (40 points)

Today you buy a GAB Industries bond. The bond has a par value of \$1,000, carries an annual coupon rate of 10%, payable semi-annually, and matures in 30 years. The yield to maturity is 9% a year, compounded semi-annually. The bond is convertible into GAB common stock at a conversion price of \$100 a share.

Today you read a forecast of GAB's common stock: earnings and dividends are expected to grow at a 30% rate for the next 10 years before declining to a 6% rate for the indefinite future. Stockholders require an 18% rate of return and yesterday the firm paid a dividend of \$2.00 a share.

{a} You hold the bond for 6 years and then convert it. If the stock's forecast holds true, compute your IRR over the 6-year holding period. Convert the IRR to an EAR.

As a guide, you will need to answer these questions in order to find the IRR.

- {i} What price did you pay for the bond?
- {ii} What is the conversion ratio?
- {iii} What is the conversion value of the bond at the end of year 6?
- {iv} Compute your IRR.

{b} Suppose that instead of converting after only 6 years, you keep it as a bond and convert the day it matures, 30 years from now. If the forecast holds, compute your IRR over the 30-year holding period. Convert the IRR to an EAR. Assume that you do receive the final coupon payment at the conversion.

{c} Comment on the size of your two computed Effective Annual IRR's relative to the 9% yield to maturity on the bond and the 18% rate of return required by stockholders on the stock. Explain why you got what you got.

[2] (60 points)

LPB Industries has the following capital structure which it believes is optimal and will be maintained:

Debt	600,000,000
Preferred Stock	100,000,000
Common Equity	300,000,000
<hr/>	
CLAIMS	1,000,000,000

The firm is planning its capital budget for the coming year and needs your expertise. The firm's marginal tax rate is 40%, it has retained earnings available for investment of \$9,000,000 and its common stock is trading for \$60 a share. Eight years ago its earnings on common stock was \$5.9338 per share and by yesterday it had risen to \$10.1955 (EPS<sub>0</sub>). Assume that this growth rate is expected to continue for the indefinite future and that the firm always uses a payout rate of 55%..

New securities can be sold under the following conditions:

DEBT: Up to \$12,000,000 in new 30 year debentures with an 8% coupon (payable annually) can be sold for \$852.48 with flotation costs of \$41.02. Beyond \$12,000,000 the flotation costs rise to \$113.29 per bond.

PREFERRED STOCK: All preferred stock with a dividend rate of 8% and a par value of \$100 is priced to yield the investor 11%. Up to \$2,000,000 the flotation costs are \$6.06. Beyond \$2,000,000 the flotation costs rise to \$15.59 a share.

COMMON STOCK: Up to \$6,000,000 in new common stock can be sold with underpricing and flotation costs of \$10 per share. Beyond \$6,000,000 the total is \$17.143.

The following six investment projects have been proposed (outlay in \$millions):

Project	Outlay	IRR
F	5	13.5%
H	5	12%
A	10	10.5%
K	10	9.5%
B	15	15.0%
P	15	13.0%

{a} Compute the cost of capital for all segments of the cost of capital schedule. ACCURATELY display your results on a graph.

{b} On the same graph, draw the firm's IRR schedule. Which projects should the firm accept?

{c} Compute the average cost of capital for the amount of the capital budget you found in {b}.

{d} Compute the NPV of project H. **Assume uniform cash flows and a life of 4 years.** Use the given IRR to first find the cash flows.

{e} If the cost of debt is so much less than the cost of equity, how can the firm consider 60% debt to be optimal?

NAME: \_\_\_\_\_

[1] (40 points)

On June 25, 2003 Maria Giovannelli makes the first of what she EXPECTS to be five equal annual deposits into an account that pays 10% annual interest. The deposits must be of sufficient size to enable Maria to withdraw \$500 per year forever starting on June 25, 2011. She fully EXPECTS the 10% rate to continue forever.

After making the originally PLANNED deposits on June 25, 2004 and 2005, Maria falls on hard times and is unable to make the final two deposits. However, on June 25, 2008 Maria, still EXPECTING the 10% rate to continue forever, makes the first of what she EXPECTS to be two equal deposits designed to enable her to still make the originally PLANNED \$500 withdrawals in perpetuity starting in 2011.

On the way to the bank to make the second deposit on June 25, 2009, Maria is told that starting that day the interest rate will drop to 8% and never change. If she still wants to maintain her original withdrawal schedule (\$500 starting in 2011), Maria knows she will have to go back home and get more money. How much more?

Hint: You will most likely want to draw at least two time lines.

[2] (40 points)

Bunky's Burgers is considering the purchase of a new piece of equipment to replace an older model. The existing equipment was purchased two years ago for \$120,000. It is being depreciated over a 12 life to a salvage value of \$24,000. If it were scrapped today, the firm would receive \$80,000. The new, more efficient model would lower annual operating expenses by \$45,000. It has a purchase price of \$200,000, an expected life of 10 years and would be depreciated using the straight-line method to a salvage value of \$10,000. Bunky estimates a required return of 15% for this project. Bunky is worried that a new federal tax law could affect the decision to buy the new model.

What is the maximum marginal tax rate that will just make the replacement acceptable to the firm?

[3] (20 points)

Suppose while driving home one day you hear on the car radio a newscaster say "and the price index fell by \*#@!& percent last month. This is an annual rate of deflation of 18%."

You immediately pull safely off the road, whip out your calculator and determine that static caused you to miss the monthly rate of what percent (four decimal places, please)?