

E120: Principles of Engineering Economics

Midterm Exam 2

Instructor: Professor Shmuel Oren

Part 1: Concepts. (25 points)

Circle the only correct answer.

1.1 Which of the following is a right of an owner of a share of common stock?

The right to directly choose the auditing firm the company uses.

The right to sue the company in bankruptcy proceedings if common dividends are not paid.

The right to vote for directors

The right to participate in any new debt offerings the company sells to public.

Preference over preferred shareholders in the payment of dividends.

1.2 Which of the following criteria is/are biased in favor of liquid investments?

I. Payback period

II. AAR

III Discounted payback period

I only

III only

I and II only

I and III only

I, II and III

1.3 If a project with conventional cash flows has an IRR less than the required return, then:

a. The profitability is less than 1.

b. The discounted payback period is zero.

c. The AAR is greater than the required return.

d. The payback period is less than the maximum acceptable period.

e. The NPV is positive.

1.4 The Equivalent Annual Cost method for evaluating projects applies when which of the following project characteristics exist(s)?

I. The projects generate different cash inflows.

II. The projects have different economic lives (duration).

III. The projects will be renewed indefinitely

III only

I and II only

I and III only

II and III only
I, II, and III.

1.5 Which of the following criteria should be applied to evaluate mutually exclusive projects?

I. NPV

II. IRR

III. PI

I only

II only

I and II only

I and III only

II and III only

Part 2: calculations.

2. (25 points) You are given the following stock quote for the stock that just paid dividend.

52 weeks				Yld		Vol					
Hi	Lo	Stock	Sym	Div	%	PE	100s	Hi	Lo	Close	Chg.
48.72	27.10	Dynegy	DYN	1.00	3.3	18	20925	31.55	29.40	30.20	-0.56

a. (12 points) Assume the quote dividend is annual, and the expected annual growth rate in dividends is 10%. Then what is the required return suggested by the constant growth model on Dynegy stock?

b. (13 points) Suppose that the dividend is expected to grow at 5% for the next 2 years and then at 10% forever. If the required return is 14%, is the stock overvalued, undervalued or fairly priced?

3. (25 points) Bill plans to open a do-it-yourself dog bathing center in a storefront. The bathing equipment will cost \$50,000. Bill expects the after-tax cash inflows to be \$15,000 annually for 8 years, after which he plans to scrap the equipment and retire to the beaches of Jamaica.

a. (6 points) What is the project's payback period?

b. (6 points) Assume the required return is 10%. If Bill's target of discounted payback period is 4 years, should he make the investment?

c. (13 points) Assume the required return is 15%, what is the project's NPV and profitability index of the investment? Should Bill make the investment?

4. (25 points) You are considering investing in a cost-cutting process. Pretax cost saving from the project is expected to equal \$50 for each of the three years of the project's life. The process has an initial cost of \$225 and will be depreciated straight-line to zero over three years. Assume a 34% tax bracket, a discounted rate of 10%, and a salvage value of zero.

a. (7 points) what is the value of the annual depreciation tax shield for the project?

b. (7 points) How much is the annual operating cash flow from the project?

c. (11 points) If the equipment is sold at the end of year 3 for \$80, what is the NPV of the project?