考試科目	財務管理	系所別	財務管理學系	考試時間	2月7日(五)第3節

Part I. Multiple Choice Questions (40 points, 4 pts each):

1. A bond with a 9-year duration is worth $1,080, and its yield to maturity is 8%. If the yield to maturity falls 160 bp, you would predict that the new value of the bond will be approximately ________ without convexity. Now we consider the convexity to be 140, your prediction would be ________ then.
   A) $1,085.12; $1,084.80
   B) $1,085.12; $1,088.43
   C) $1,094.40; $1,094.29
   D) $1,094.40; $1,094.59
   E) $1,078.34; $1,078.69

2. A perpetuity pays $100 each and every year forever. The duration of this perpetuity will be ________ if its yield is 9%.
   A) 7
   B) 9
   C) 9.39
   D) 12.11
   E) Infinity

3. ART Co. has come out with a new and improved product. As a result, the firm projects a 5% growth rate on dividends. It maintains a dividend payout ratio of 0.80 and its earnings at the conclusion of this coming year is expected to be $3 per share. Investors expect a 12% rate of return on the stock. At what P/E ratio would you expect ART to sell?
   A) 8.33
   B) 10.19
   C) 11.43
   D) 14.29
   E) 15.25

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

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4. On Monday morning you sell one June T-bond futures contract at $97,843.75. The contract's face value is $100,000. The initial margin requirement is $2,700, and the maintenance margin requirement is $2,000 per contract. Use the following price data to answer the following questions.

Day	Settle
Monday	$ 97,406.25
Tuesday	$ 98,000.00
Wednesday	$ 99,000.00
Thursday	$ 99,050.00

On which of the following days do you get your first margin call?

A) Monday
B) Tuesday
C) Wednesday
D) Thursday
E) none of these options

5. Suppose two portfolios have the same average return and the same standard deviation of returns, but Buckeye Fund has a higher beta than Husker Fund. According to the Treynor measure, the performance of Buckeye Fund

A) is poorer than the performance of Husker Fund.
B) is better than the performance of Husker Fund.
C) is the same as the performance of Husker Fund.
D) cannot be measured as there are no data on the alpha of the portfolio.
E) None of the options are correct.

6. Eliminating polluting or high carbon-emitting companies from the investment opportunity set will generally move the efficient frontier ________ and to the ________.

A) down; right
B) down; left
C) up; right
D) up; left
E) none of the above because those socially inappropriate firms have no impact on future performance

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7. Which one of the following could probably increase investors' interest in an IPO?
   I. Reducing the lockup period
   II. News release of very strong book building on the first day of the road show
   III. Underpricing the IPO
   IV. Increasing the magnitude of the Green Shoe option
   A) I and III
   B) II and IV
   C) II and III
   D) II, III and IV
   E) I, III and IV

8. Consider a portfolio comprised of four risky securities. Assume the economy has three economic states with varying probabilities of occurrence. Which one of the following will guarantee that the portfolio variance will equal zero?
   A) The portfolio beta must be 1.0.
   B) The portfolio expected rate of return must be the same for each economic state.
   C) The portfolio risk premium must equal zero.
   D) The portfolio expected rate of return must equal the expected market rate of return.
   E) There must be equal probabilities that the state of the economy will be a boom or a bust.

9. The net present value
   A) increases as the required rate of return decreases.
   B) is equal to the initial investment when the internal rate of return is equal to the required return.
   C) cannot be applied to mutually exclusive projects.
   D) ignores cash flows that are distant in the future.
   E) cannot be applied in the presence of non-conventional cash flows.

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10. Firm A uses straight-line depreciation. Firm B uses MACRS depreciation. Both firms bought $75,000 worth of equipment last year that has a tax life of 5 years. The 5-year MACRS percentage rates, starting with Year 1, are: 20, 32, 19.2, 11.52, 11.52, and 5.76. Both firms have a marginal tax rate of 34 percent and identical operating cash flows except for the depreciation effects. Given this, you know the:
    - A) depreciation expense for Firm A will be greater than Firm B's expense every year.
    - B) equipment has a higher value on Firm B's books than on Firm A's at the end of Year 2.
    - C) market value of Firm A's equipment is greater than the market value of Firm B's at end the first year.
    - D) market value of Firm B's equipment is greater than the market value of Firm A's equipment at the end of Year 2.
    - E) operating cash flow of Firm A is greater than that of Firm B for Year 3.

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Part II Short Essay Questions (60 pts)

1. Bill Gates (age 64 years) owned 44.8% of Microsoft (MSFT) stocks right after its IPO in 1986. He hired a money manager Michael Larson in 1993 to manage his money. Larson started by liquidating some of Gates' Microsoft shares and invested the proceedings on other stocks. He delivered a compound annual return of 11% since 1995, outperforming the S&P 500 by more than 1%. In 2019, Gates only owns a little more than 1% of Microsoft shares, which accounts for about 10% of his wealth. However, if Gates held on to his Microsoft shares, he would have broken the $100 billion mark last century instead of last year, and he'll have more than $500 billion's worth MSFT stocks at his disposal. Gates have 80% of his wealth on stocks in 2019, the leading one is Berkshire Hathaway, an American multinational conglomerate holding company run by Warren Buffet. This stock alone accounts for 40% of his wealth. Please answer the following two questions with finance theories, stylized facts and your knowledge on the real world.
   A) (6pts) Without perfect hindsight, would you sell that much Microsoft shares if you oversaw Bill Gates' wealth and why?
   B) (6pts) Would you suggest a different asset allocation if you are making a decision today and why?

2. Aberdeen Wholesale Company is an all-equity firm which has an expected ROE of 12% for 2020. Its expected EPS in the end of 2020 is $5 and it has a plowback ratio at 60%. The firm will only use the retained earnings for investment without issuing new stocks or bonds during the year. The current risk-free rate is 2% and the equity risk premium is 8%. The beta of the firm is equal to 1.
   A) (6pts) What is the fair price of the stock in the end of 2019 and the present value of growth opportunities in it?
   B) (6pts) Suppose the risk-free rate goes up to 5% sharply in the end of 2020, while market risk premium and the firm's beta remain the same. Aberdeen Wholesale Company still achieves its earning target during the year with the same expected ROE for the following years. The firm also plans to keep the same dividend policy. What is the fair price of the stock in the end of 2020 with the updated information (we consider ex-dividend price in this question)?
   C) (6pts) You are a member of the board of directors in the end of 2020. Do you think this company should change its dividend policy moving forward under the new interest rate environment? What do you propose and why?

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3. Two risky assets, A and B, are both on the efficient frontier. The standard deviation of return on A is 24%, while the standard deviation on B is 12%. The correlation coefficient between the returns on A and B is 0. The expected return on A is 12%, while on B it is 2%.
   A) (6pts) The global minimum-variance portfolio can be constructed by these two assets. Please show its weights on A and B, as well as its expected return and standard deviation.
   B) (6pts) The return on the risk-free asset is also 2%. Please tell me which asset or portfolio in this question would be your investment choice and why.

4. You are analyzing a 3-year project and have developed the following estimates. The initial capital spending is $150,000 with 5-year straight line depreciation. The salvage value at the end of the project is $100,000 and the tax rate is 35 percent. The project requires a $20,000 net working capital. The required return of the project is 15%.

	Base-Case	Lower Bound	Upper Bound
Unit sales	11,300	9,800	12,800
Sales price per unit	$ 39	$ 34	$ 44
Variable cost per unit	$ 25	$ 24	$ 26
Fixed costs	$ 9,700	$ 9,200	$ 10,200

   A)(6pts) What is the worst-case operating cash flow (pick the worst possible scenario from the above table for each variable disregarding their correlation)?
   B)(6pts) What is the aftertax salvage value?
   C)(6pts) The board will only approve the project if it can still make money even in the worst case scenario. Do you think this should be approved?

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