

# 國立中山大學 113 學年度 碩士班暨碩士在職專班招生考試試題

科目名稱：財務管理【財管系碩士班丙組】

## — 作答注意事項 —

考試時間：100 分鐘

- 考試開始鈴響前不得翻閱試題，並不得書寫、劃記、作答。請先檢查答案卷（卡）之應考證號碼、桌角號碼、應試科目是否正確，如有不同立即請監試人員處理。
- 答案卷限用藍、黑色筆(含鉛筆)書寫、繪圖或標示，可攜帶橡皮擦、無色透明無文字墊板、尺規、修正液（帶）、手錶(未附計算器者)。每人每節限使用一份答案卷，請衡酌作答。
- 答案卡請以 2B 鉛筆劃記，不可使用修正液（帶）塗改，未使用 2B 鉛筆、劃記太輕或污損致光學閱讀機無法辨識答案者，後果由考生自負。
- 答案卷（卡）應保持清潔完整，不得折疊、破壞或塗改應考證號碼及條碼，亦不得書寫考生姓名、應考證號碼或與答案無關之任何文字或符號。
- 可否使用計算機請依試題資訊內標註為準，如「可以」使用，廠牌、功能不拘，唯不得攜帶書籍、紙張（應考證不得做計算紙書寫）、具有通訊、記憶、傳輸或收發等功能之相關電子產品或其他有礙試場安寧、考試公平之各類器材入場。
- 試題及答案卷（卡）請務必繳回，未繳回者該科成績以零分計算。
- 試題採雙面列印，考生應注意試題頁數確實作答。
- 違規者依本校招生考試試場規則及違規處理辦法處理。

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一、單選題(共五十分；第 1 題至第 10 題，每題 2 分，第 11 題至第 20 題每題 3 分)

1.(2 points)

Dividends paid reduce the net income that is reported on a company's income statement.

(A) True.

(B) False.

2. (2 points)

Additional funds needed (AFN) are typically raised using a combination of notes payable, long-term debt, and common stock. Such funds are non-spontaneous in the sense that they require explicit financing decisions to obtain them.

(A) True.

(B) False.

3. (2 points)

Since the ROA measures the firm's effective utilization of assets without considering how these assets are financed, two firms with the same EBIT must have the same ROA.

(A) True.

(B) False.

4. (2 points)

In general, if investors regard a company as being relatively risky and/or having relatively poor growth prospects, then it will have relatively high P/E and M/B ratios.

(A) True.

(B) False.

5. (2 points)

If you were restricted to investing in publicly traded common stocks, yet you wanted to minimize the riskiness of your portfolio as measured by its beta, then according to the CAPM theory you should invest an equal amount of money in each stock in the market. That is, if there were 10,000 traded stocks in the world, the least risky possible portfolio would include some shares of each one.

(A) True.

(B) False.

6. (2 points)

The beta coefficient of a stock is normally found by regressing past returns on a stock against past market returns. One could also construct a scatter diagram of returns on the stock versus those on the market, estimate the slope of the line of best fit, and use it as beta. However, this historical beta may differ from the beta that exists in the future.

(A) True.

(B) False.

7. (2 points)

Forward contracts are generally standardized instruments, whereas futures contracts are generally tailor-made for the 2 parties of the contract.

(A) True.

(B) False.

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8. (2 points)

The price of a call option increases as the risk-free rate increases.

- (A) True.
- (B) False.

9. (2 points)

A riskless hedge can best be defined as a hedge in which an investor buys a stock and simultaneously sells a call option on that stock and ends up with a riskless position.

- (A) True.
- (B) False.

10. (2 points)

Foreign bonds are bonds sold by a foreign borrower but denominated in the currency of the country in which the issue is sold.

- (A) True.
- (B) False.

11. (3 points)

Assume that OpenSU Equipment commenced operations on January 1, 2020, and it was granted permission to use the same depreciation calculations for shareholder reporting and income tax purposes. The company planned to depreciate its fixed assets over 15 years, but in December 2020 management realized that the assets would last for only 10 years. The firm's accountants plan to report the 2020 financial statements based on this new information. How would the new depreciation assumption affect the company's financial statements?

- (A) The firm's cash position in 2020 and 2021 would increase.
- (B) The firm's operating income (EBIT) would increase.
- (C) The firm's reported 2020 earnings per share would increase.
- (D) The firm's reported net fixed assets would increase.
- (E) The provision will increase the company's tax payments.

12. (3 points)

Which of the following factors would be most likely to lead to an increase in nominal interest rates?

- (A) The Federal Reserve decides to try to stimulate the economy.
- (B) Households reduce their consumption and increase their savings.
- (C) A new technology like the AI has just been introduced, and it increases investment opportunities.
- (D) There is a decrease in expected inflation.
- (E) The economy falls into a recession.

13. (3 points)

Assume the following: The real risk-free rate is expected to remain constant. Inflation is expected to be 2% next year and then to be constant at 1.5% a year thereafter. The maturity risk premium is zero. Given this information, which of the following statements is CORRECT?

- (A) The yield curve for U.S. Treasury securities will be upward sloping.
- (B) If the expectations theory holds, the Treasury bond yield curve will never be downward sloping.
- (C) A 5-year corporate bond must have a lower yield than a 7-year Treasury security.
- (D) The real risk-free rate cannot be constant if inflation is not expected to remain constant.
- (E) This problem assumed a zero maturity risk premium, but that is probably not valid in the real world.

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14. (3 points)

A highly risk-averse investor is considering adding one additional stock to a 4-stock portfolio, to form a 5-stock portfolio. The four stocks currently held all have  $\beta = 1.0$ , and they are perfectly positively correlated with the market. Potential new Stocks A and B both have expected returns of 9%, are in equilibrium, and are equally correlated with the market, with  $r = 0.65$ . However, Stock A's standard deviation of returns is 5% versus 7% for Stock B. Which stock should this investor add to his or her portfolio, or does the choice not matter?

- (A) Either A or B, i.e., the investor should be indifferent between the two.
- (B) Stock A.
- (C) Stock B.
- (D) Neither A nor B, as neither has a return sufficient to compensate for risk.
- (E) Add A, since its beta must be lower.

15. (3 points)

Which of the following statements is CORRECT?

- (A) For a project with normal cash flows, any change in the WACC will change both the NPV and the IRR.
- (B) To find the MIRR, we first compound cash flows at the regular IRR to find the TV, and then we discount the TV at the WACC to find the PV.
- (C) The NPV and IRR methods both assume that cash flows can be reinvested at the WACC. However, the MIRR method assumes reinvestment at the MIRR itself.
- (D) One advantage of the NPV over the IRR is that NPV assumes that cash flows will be reinvested at the WACC, whereas IRR assumes that cash flows are reinvested at the IRR. The NPV assumption is generally more appropriate.
- (E) If two projects have the same cost, and if their NPV profiles cross in the upper right quadrant, then the project with the higher IRR probably has more of its cash flows coming in the later years.

16. (3 points)

Which one of the following statements is most CORRECT?

- (A) Real options can reduce the cost of capital that should be used to discount a project's expected cash flows.
- (B) The option to switch the type of fuel used in an industrial furnace to lower the cost of production is not a real option.
- (C) An increase in the cost of obtaining the real option increase the value of a real option.
- (D) Real options are more valuable when there is very little uncertainty about the true values of future sales and costs.
- (E) Real options change the size, but not the risk, of projects' expected NPVs.

17. (3 points)

Which of the following statements is NOT CORRECT?

- (A) After a 3-for-1 stock split, a company's price per share should fall, but the number of shares outstanding will rise.
- (B) If a firm repurchases some of its stock in the open market, then shareholders who sell their stock for more than they paid for it will be subject to capital gains taxes.
- (C) If a company has an established clientele of investors who prefer a high dividend payout, and if management wants to keep stockholders happy, it should not follow the strict residual dividend policy.
- (D) If a firm follows a strict residual dividend policy, then, holding all else constant, its dividend payout ratio will tend to rise whenever its investment opportunities improve.
- (E) Investors may interpret a stock repurchase program as a signal that the firm's managers believe the stock is undervalued, or, alternatively, as a signal that the firm does not have many good investment opportunities.

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18. (3 points)

Which of the following statements is most CORRECT?

- (A) Not all target firms are acquired by publicly traded corporations. In recent years, an increasing number of firms have been acquired by private equity firms. Private equity firms raise capital from wealthy individuals and look for opportunities to make profitable investments.
- (B) Leveraged buyouts (LBOs) occur when a firm issues equity and uses the proceeds to take a firm public.
- (C) Acquiring firms send a signal that their stock is undervalued if they choose to use stock to pay for the acquisition.
- (D) In a liquidation, the firm's existing stockholders are given new stock representing separate ownership rights in the division that was divested. The division establishes its own board of directors and officers, and it becomes a separate company.
- (E) The smaller the synergistic benefits of a particular merger, the greater the scope for striking a bargain in negotiations, and the higher the probability that the merger will be completed.

19. (3 points)

OpenSU recently completed a 4-for-1 stock split. Prior to the split, its stock sold for \$200 per share. If the firm's total market value increased by 2% as a result of increased liquidity and favorable signaling effects, what was the stock price following the split?

- (A) \$38.22
- (B) \$49.02
- (C) \$51.00
- (D) \$51.05
- (E) \$55.00

20. (3 points)

A 6-month put option on OpenSU Corp.'s stock has a strike price of \$50.5 and sells in the market for \$11.2. Smith's current stock price is \$45. What is the option premium?

- (A) \$5.5
- (B) \$5.6
- (C) \$5.7
- (D) \$6.0
- (E) \$6.2

二、問答及計算題(共五十分)

1. (10 points)

Managerial compensation can be used to encourage managers to act in the best interest of stockholders. One commonly cited tool is stock options. The idea is that if management has an ownership interest in the firm, they will be more likely to try to maximize owner wealth. A study performed at Harvard Business School indicates that the total return to shareholders is closely related to the nature of CEO compensation; specifically, higher returns were achieved by CEOs whose pay packages included more options and stock components. However, this may not be the best way to encourage managers to act in the stockholders' best interest. Why? Please state clearly at least two possible explanations.

2. (10 points)

(a) (5 points)

What is quantitative investing? The efficient-market hypothesis (EMH) is divided into three categories: weak, semi-strong, and strong, depending on the level of information that is already reflected in the prices of assets. What level of market efficiency is best for quantitative investment strategies?

(b) (5 points)

Please define what Active ETF and Passive ETF are, respectively.

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3. (10 points)

OpenSU company is considering a new project for \$10,000 million at  $t=0$ . Because this is a green project, OpenSU is applying for the government tax reduction program. The after-tax cash flows generated will depend on whether the application is approved and there is a 50-50 chance the application will pass. If it passes, after-tax cash flow will be \$3,500 million per year for the next 5 years. If it doesn't pass, the after-tax cash flows will be \$1,800 million per year for the next 5 years. The project's WACC is 10%. If the tax is not passed, the firm has the option to abandon the project 1 year from now, in which case the property could be sold to net \$6,600 million after tax at  $t=1$ . What is the value of the abandonment option?

(Note:

\*\*\*PVIF( $r, n$ ) is defined as the present value of \$1 to be received after  $t$  periods; PVIFA( $r, n$ ) is defined as the present value of an annuity of \$1 per period for  $t$  periods; PVIF(0.1, 1)=0.91; PVIF(0.1, 2)=0.83; PVIF(0.1, 3)=0.75; PVIF(0.1, 4)=0.68; PVIF(0.1, 5)=0.62; PVIFA(0.1, 5)=3.79

\*\*\*請詳列計算過程，清楚表達如何計算)

4. (10 points)

The new CFO of OpenSU wants to evaluate whether to increase the debt ratio. The financial information of OpenSU is described as follows:

Sales: \$80,000

Operation costs: \$45,000

Year-end assets: \$50,000

Debt ratio: 20%

Interest rate on the debt: 6%

Tax rate: 30%

The new CFO wants to use a 40% debt ratio. Assuming that sales, operation costs, and total assets would not be affected, the firm's interest rate will increase to 7%, and the tax rate will decrease to 28%, respectively. Please help the new CFO calculate how much the ROE would change in response to the change in the capital structure. (Note: \*\*\*請詳列計算過程，清楚表達如何計算)

5. (10 points)

(a) (5 points)

OpenSU has a beta of 1.4 when the market is in equilibrium, and the required return on the stock is 12%. Meanwhile, the required return on an average stock is 10%. Now, the required return on an average stock increases to 15%. Neither betas nor the risk-free rate change. What would OpenSU's new required return be? (Note: \*\*\*請詳列計算過程，清楚表達如何計算)

(b) (5 points)

The main products of OpenSU are exported to the European Union. The CFO found that OpenSU's carbon emissions were too high and did not comply with government and international regulations.

Please define what carbon tax is and what impact carbon tax has on company operations. Besides reducing carbon emissions by optimizing manufacturing processes, what else can you do to help your company reduce carbon border tax if you are a CFO?