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國立清華大學 112 學年度碩士班考試入學試題

系所班組別：計量財務金融學系  
甲組(財務金融組)

科目代碼：5103

考試科目：財務管理

### — 作答注意事項 —

1. 請核對答案卷(卡)上之准考證號、科目名稱是否正確。
2. 考試開始後，請於作答前先翻閱整份試題，是否有污損或試題印刷不清，得舉手請監試人員處理，但不得要求解釋題意。
3. 考生限在答案卷上標記「 由此開始作答」區內作答，且不可書寫姓名、准考證號或與作答無關之其他文字或符號。
4. 答案卷用盡不得要求加頁。
5. 答案卷可用任何書寫工具作答，惟為方便閱卷辨識，請儘量使用藍色或黑色書寫；答案卡限用 2B 鉛筆畫記；如畫記不清(含未依範例畫記)致光學閱讀機無法辨識答案者，其後果一律由考生自行負責。
6. 其他應考規則、違規處理及扣分方式，請自行詳閱准考證明上「國立清華大學試場規則及違規處理辦法」，無法因本試題封面作答注意事項中未列明而稱未知悉。

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單選題 全部共二十五題，每題四分。答錯者每題倒扣一分，倒扣率即為 1/4。

1. Johnson Co. has sales of \$312,800, accounts receivable of \$62,700, cost of goods sold of \$218,400 and inventory of \$46,300. How many days, on average, does it take the firm to both sell its inventory and receive payments from the sales?  
(A) \$ 142  
(B) \$ 96  
(C) \$ 151  
(D) \$ 178  
(E) \$ 165
  
2. Aron's purchased some property for \$1.4 million, paid 25 percent down in cash, and financed the balance for 12 years at 7.2 percent, compounded monthly. What is the amount of each monthly mortgage payment?  
(A) \$10,464.03  
(B) \$10,928.26  
(C) \$10,352.66  
(D) \$10,910.27  
(E) \$9,513.67
  
3. Which of the following is Wrong?  
(A) The internal rate of return is computed using a project's cash flows as the source of inputs.  
(B) A conventional investment project is acceptable, if its internal rate of return is greater than the discount rate.  
(C) A manager needs the discount rate information, when he applies the IRR method of capital budgeting analysis to evaluate whether to accept an independent project.  
(D) Calculating the internal rate of return, a manager needs the discount rate information.  
(E) If a firm does not have enough capital to fund all positive NPV projects, Profitability Index can give a useful ranking rule to select project.

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4. The North89 Co. has total assets of \$821,600, current liabilities of \$49,700, dividends paid of \$12,000, net sales of \$68,400, and net income of \$55,400. Suppose that all costs, assets, and current liabilities change spontaneously with sales. The tax rate and dividend payout ratios remain constant. If the firm's financial managers precast a firm growth rate of 8 percent for next year, what will be the amount of external financing needed to support this level of growth? Assume the firm is currently operating at full capacity.
- (A) \$3,10  
(B) -\$13,490  
(C) -\$3,520  
(D) \$15,640  
(E) \$14,880
5. EveJocy Co. had a share price of \$42.5. It had 91.33 million shares outstanding, a market-to-book ratio of 3.76. Moreover, the firm had \$845.01 million in outstanding debt, \$163.82 million in net income, cash of \$257.09 million, \$340 million in EBIT and \$30 million in depreciation. The firm's enterprise value multiples (EV/EBITDA) is closest to:
- (A) 4.16.  
(B) 12.08.  
(C) 11.95.  
(D) 12.65.  
(E) 37.97.
6. Southway Co. decided to save \$3,200 a quarter for the next three years. The money will earn 3.6 percent, compounded quarterly, and the first deposit will be made today. If the company had wanted to deposit one lump sum today, rather than make quarterly deposits, about how much would it have had to deposit to have the same amount saved at the end of the three years?
- (A) \$36,737  
(B) \$34,678  
(C) \$33,428  
(D) \$36,244  
(E) \$36,571

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7. Which of the following may Not be treated as an incremental cash flow when computing the NPV of an investment?
- (A) A reduction in the sales of a company's other products caused by the investment.
  - (B) Annual depreciation expense from the investment.
  - (C) Dividend payments by the firm.
  - (D) The flotation cost caused by raising new capital for the investment.
  - (E) Salary and medical costs for production personnel who will be employed only if the project is accepted.
8. Which of the following statements about Price-earnings ratios is Wrong?
- (A) Companies with opportunities to invest in projects with large, positive NPVs are likely to have high PE ratios.
  - (B) Firms following conservative accounting practices will likely have high PE ratios.
  - (C) Higher-risk stocks are likely to have high PE ratios.
  - (D) Investment opportunities typically have the biggest impact on PE ratio.
  - (E) To discount future CFs to value stock price implies the forward PE is more meaningful. On the other hand, trailing earnings reflect what actually happened.
9. The prediction for returns of stock A and stock B are as following. Suppose financial analysts believe that there are three states.

State of Economy	Probability of state of economy	Rate of return if state occurs	
		Stock A	Stock B
Recession	0.1	0.06	-0.20
Normal	0.6	0.07	0.13
Boom	0.3	0.11	0.33

What are the correlation and covariance between stock A and stock B, respectively?

- (A) 0.85 and 0.02216.
- (B) 0.76 and 0.002433.
- (C) 0.76 and 0.02216.

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(D) 0.82 and 0.02216.

(E) 0.85 and 0.002433.

10. Which of the following statements is Wrong?

(A) To evaluate stock price, we discount the future cash flows from stock based on the after-tax debt and equity weighted average cost of capital.

(B) The dividend yield is the annual dividend divided by the current price.

(C) To calculate NPV or EV, we adopt the after-tax weighted average cost of capital as discounted rate.

(D) Only a well-diversified portfolio, lines on capital market line but all individual securities or possible portfolios line on security market line.

(E) if a security's beta and expected returns lying below the security market line, the security is overpriced.

11. Heavy Metal Corporation is expected to generate the following free cash flows over the next five years:

Year	1	2	3	4	5
\$ million	50	68	70	76	80

After then, the free cash flows are expected to grow at the industry average of 5% per year. The required rate of stockholder is 11%. The weighted average cost of capital of is 7.5%. If Heavy Metal has \$25 million excess cash, debt of \$306 million, and 32 million shares outstanding. What is its share price?

(A) \$24.9.

(B) \$72.1.

(C) \$24.2.

(D) \$10.6.

(E) \$72.9.

12. Which of the following statement is Wrong?

(A) Rationality, high correlated deviations from rationality, and arbitrage are conditions that Andrei Shleifer presents as the conditions that create market efficiency.

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- (B) Accounting choices should not affect stock price, if the information is enough and the market is efficient in a semi-strong form.
- (C) Serial correlation supports weak form efficiency when the correlation coefficient is near zero.
- (D) Studies of the performance of professionally managed mutual funds find that these funds perform in a manner consistent with semi-strong form efficiency.
- (E) Ikenberry, et al. (1995) find that stock returns of repurchasing firms are abnormally high in the two years following repurchase, suggesting that timing is effective.
13. Spacepass Co. evaluates a new project with perpetual revenue of \$435,000, cash costs of \$310,000, and a tax rate of 21 percent. The company plans to issue \$250,000 of debt at an interest rate of 7.5 % to help finance the initial project cost of \$475,000. The levered discount rate is 16.7%. What is the net present value of this project?
- (A) \$252,619  
(B) \$29,985  
(C) \$279,985  
(D) \$277,619  
(E) \$27,619
14. Metamorlight Inc. has debt with both a face and a market value of \$27,000. This debt has a coupon rate of 7 percent with annual interest payment. The expected earnings before interest and taxes is \$87,200, the unlevered cost of capital is 12%, and the tax rate is 21%. What is the firm's cost of equity?
- (A) 11.25 percent  
(B) 12.19 percent  
(C) 13.21 percent  
(D) 14.27 percent  
(E) 15.85 percent
15. A convertible bond is selling for \$1,237. The bond has 10 years to maturity, a \$1,000 face value, a coupon rate of 10 percent, and semiannual interest payments. Its conversion ratio is 35. The stock price currently is \$31 a share.

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Similar non-convertible bonds are priced to yield 4 percent per six months.

What is the convertible bond's option value?

- (A) \$17.50
- (B) -\$404.50
- (C) \$13.59
- (D) \$101.10
- (E) \$152.00

16. Firm A has a market value of \$8,400 with 110 shares outstanding and a price per share of \$70. Firm B has a market value of \$2,000 with 100 shares outstanding and a price per share of \$20. Firm A is acquiring Firm B by exchanging 30 of its shares for all 100 of Firm B's shares. Assume the merger creates \$350 of synergy. What will be the value of Firm A's shareholders' stake in the merged firm?

- (A) \$8,485
- (B) \$8,446
- (C) \$8,820
- (D) \$8,640
- (E) \$9,050

17. Leyo Co. is being liquidated. The mortgage holder is owed \$848,000, the other secured creditors are owed \$118,000, and the unsecured creditors are owed \$329,000. Administrative costs of liquidation, wage and benefit payments, and consumer claims amount to \$330,000. The firm owes no taxes. The building, which is mortgaged, just netted \$714,000 after sale costs. The remaining assets have yielded \$467,000 in net proceeds. How much will the unsecured creditors receive per each dollar they are owed?

- (A) \$0.027
- (B) \$0.025
- (C) \$0.333
- (D) \$0.041
- (E) \$0.533

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*Valuation and Capital Budgeting Case*

Based on the following information, please answer the questions from 18 to 20.

Hyperlink is an integrated circuit company. Most of the IC chip is sold under contract, with excess production sold on the spot market. Hyperlink has been approached by Demoright Company with a request to supply chip for the next 4 years. Hyperlink is considering building an advanced chip factory in Taiwan on a land purchased two years ago. Based on a recent appraisal, the company estimates it could receive \$6.5 million on an after-tax basis if it sold the land today.

Hyperlink will need to purchase additional necessary equipment, which will cost \$95 million. The equipment will be depreciated at 14%, 25%, 17%, and 12% of asset's cost from Years 1 to 4. The contract runs for only four years. The company feels that the equipment can be sold for 60 percent of its initial purchase price in four years.

The contract calls for the delivery of 500,000 chips per year at a price of \$86 per chip. Hyperlink estimates that chip production will be 630,000 chips, 690,000 chips, 740,000 chips, and 890,000 chips, respectively, over the next four years. The excess production will be sold in the spot market at average of \$78 per chip. Variable costs amount to \$28 per chip, and fixed costs are \$4,100,000 per year. The factory will require a net working capital investment of 5 percent of sales. The NWC will be built up in the year prior to the sales.

Hyperlink will be responsible for reclaiming the land at termination of the project to meet the regulations. This will occur in Year 5. It is estimated the cost of reclamation will be \$2.7 million. The company agreed to donate the land to the government in Year 6 and result in a charitable expense deduction of \$6 million. Hyperlink faces a 25 percent tax rate and has a 12 percent required return on the new factory project. Assume that a loss in any year will result in a tax credit.

18. What is the *discount* payback period of the Hyperlink's new factory project?

It is close to:

- (A) 3.58 years
- (B) 4.32 years
- (C) 5.54 years
- (D) 3.04 years
- (E) 3.16 years



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19. What is the net present value of the Hyperlink's new factory project? It is about:
- (A) \$17,321,564
  - (B) \$19,324,536
  - (C) \$20,343,847
  - (D) \$21,436,475
  - (E) \$23,847,243
20. What is the internal rate of return for the new factory project? It is close to:
- (A) 5%
  - (B) 10%
  - (C) 15%
  - (D) 20%
  - (E) 25%

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*Hedge the Currency Risk Case*

Based on the following information, please answer the questions from 21 to 25.

Cosmiclight Co., a U.S. company, expects has Euro (EUR) receivables in one year of 570 million. The CFO forecasts that the EUR depreciates 4% in the coming year with probability 70% and the EUR appreciates 1% with probability 30%. The current level is \$1.2 per Euro. The \$ denotes as US dollar (USD).

The CFO evaluates various hedging alternatives available to Cosmiclight. He collected the information in following on options and interest rates. He also finds that one-year future contracts (contract size =125,000 Euro) are trading at \$1.194 per Euro.

Option Quotations

Option Type	Contract Size	Time to Maturity	Strike Price	Premium per Currency Unit
Put	125,000 Euro	1 year	\$1.20	\$0.01

Money market Rates

Reference Rate	Time to Maturity	Currency	Rate
LIBOR	1 year	USD	0.4%
EURIBOR	1 year	EUR	0.8%

Cosmiclight Co. deposits or lends at these rates. Cosmiclight obtains its borrowing rates by adding 20 basis points. 1 basis point =0.01%.

Currency scenarios constructed using information provided in the case. Please answer the following questions:

21. What are the expected cash flows and standard deviation of cash flows, if Cosmiclight Co. does Not hedge the currency risk? They are respectively about:
- (A) \$632,200,000 and \$14,324,200.
  - (B) \$634,300,000 and \$12,354,300.
  - (C) \$670,200,000 and \$16,324,305.
  - (D) \$680,342,000 and \$11,234,204.
  - (E) \$666,900,000 and \$15,672,409.

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22. What are the expected cash flows and standard deviation of cash flows, if Cosmiclight Co. uses *futures* to hedge the currency risk? They are respectively close to:
- (A) \$640,432,700 and \$18,333,243.
  - (B) \$620,324,000 and \$0.
  - (C) \$680,580,000 and \$0.
  - (D) \$600,253,000 and \$17,930,000
  - (E) \$690,342,000 and \$0
23. What are the expected cash flows and standard deviation of cash flows, if Cosmiclight Co. uses *money market* to hedge the currency risk? They are respectively close to:
- (A) \$680,867,806 and \$1,134,482.
  - (B) \$670,784,043 and \$1,345,230.
  - (C) \$660,317,846 and \$0.
  - (D) \$679,936,634 and \$0.
  - (E) \$691,434,365 and \$0.
24. What are the expected cash flows and standard deviation of cash flows, if Cosmiclight Co. uses the *Put* options to hedge the currency risk? They are respectively close to:
- (A) \$680,317,800 and \$3,134,482.
  - (B) \$670,324,000 and \$2,345,230.
  - (C) \$680,317,800 and \$1,800,300.
  - (D) \$680,317,800 and \$1,930,000.
  - (E) \$670,324,000 and \$1,280,540.
25. Based on the CFO's forecasting, which hedging method or unhedged is better for Cosmiclight co. in terms of the expected cash flows and standard deviation of cash flows ?
- (A) Unhedged.
  - (B) Hedge with future contract.
  - (C) Hedge with money market method.
  - (D) Hedge with options contract.
  - (E) None of all.