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並不得書寫、畫記、作答。

國立清華大學 110 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：4903

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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共 10 頁，第 1 頁

*請在【答案卷 **(卡)**】作答

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. J&J's has total net income of \$418,400, earnings before interest and taxes (EBIT) of \$102,500, depreciation of \$59,100, and an average tax rate of 21 percent. The company is all-equity financed with 15,000 shares outstanding at a book value of \$38 a share and a price-to-book ratio of 3. What is the firm's EV/EBITDA ratio if the firm has excess cash of \$49,200?
A) 9.67
B) 10.28
C) 8.39
D) 9.15
E) 10.98
2. You borrowed a \$5,000, 5-year loan at 9% interest. The loan agreement requires the firm to pay principal each year plus interest for that year. Then, you would pay a fixed payment per year. In the second year, you surprisingly won a lottery. If you want to pay all the loan clearly in the end of year 2, how much should you pay?
A) 1,280
B) 2,583
C) 3,541
D) 4,120
E) 4,539
3. Jeff is the recipient of a trust that will pay him \$1,000 on the first day of each month, starting immediately and continuing for 40 years. What is the value of this inheritance today if the discount rate is 7.3 percent, compounded monthly?
A) \$146,811
B) \$137,557
C) \$180,204
D) \$156,385
E) \$380,102

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共 10 頁，第 2 頁 *請在【答案卷、卡】作答

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。

4. A new project requires initial cost of \$17,500 and would produce annual cash flows of \$4,850, \$8,500, \$4,000, and \$4,000 for Years 1 to 4, respectively. The required payback period is 2.9 years and the discounted payback period is 3.6 years. The required rate of return is 9 percent. Which methods indicate project acceptance and which indicate project rejection?
- A) Accept: NPV, IRR, PI, payback; Reject: discounted payback
B) Accept: NPV, IRR, PI; Reject: payback, discounted payback
C) Accept: payback, PI; Reject: NPV, IRR, discounted payback
D) Accept: payback, discounted payback; Reject: NPV, IRR, PI
E) Accept: NPV, IRR; Reject: PI, payback, discounted payback
5. Andrew is working on a bid for a contract. Thus far, he has determined that he will need \$197,000 for fixed assets and another \$62,000 for net working capital at Time 0. He has also determined that he can recover \$79,900 aftertax for the combined fixed assets and net working capital at the end of the 3-year project. What operating cash flow will be required each year for the project to return 14 percent in nominal terms?
- A) \$88,330
B) \$97,489
C) \$110,248
D) \$128,330
E) \$113,069

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共 10 頁，第 3 頁 *請在【答案卷、卡】作答

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。

6. TSE Auto has sales of \$848,600, net income of \$94,000, dividends paid of \$28,200, total assets of \$913,000, and current liabilities of \$78,900. 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 managers project a firm growth rate of 15 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) \$39,535
 - B) \$49,445
 - C) -\$10,202
 - D) \$14,302
 - E) \$31,305
7. Crystal co. issues a bond which has a coupon rate of 8.2 percent, a \$500 par value, matures in 11.5 years, has a yield to maturity of 7.67 percent, and pays interest annually. What is the current yield?
- A) 7.89 percent
 - B) 8.32 percent
 - C) 7.54 percent
 - D) 8.47 percent
 - E) 8.82 percent
8. Taylor's Audio Shop has a cost of equity of 10%, a cost of preferred stock of 8% and a cost of debt of 6%. The firm has 104,000 shares of common stock outstanding at a market price of \$20 a share. There are 40,000 shares of preferred stock outstanding at a market price of \$34 a share. The bond issue has a total face value of \$500,000 and sells at 102% of face value. The tax rate is 21%. What is the weighted average cost of capital for Taylor's Audio Shop?
- A) 7.54 percent
 - B) 8.52 percent
 - C) 8.63 percent
 - D) 8.37 percent
 - E) 8.76 percent

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共 10 頁，第 4 頁 *請在【答案卷、卡】作答

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。

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

Year	1	2	3	4	5
CFC(\$million)	52.2	68.7	77.2	75.6	80.5

After then, the free cash flows are expected to grow at the industry average of 4.1% per year. The weighted average cost of capital of the company is 14.9%. TW Metal has \$20 million excess cash, debt of \$306 million, and 45 million shares outstanding. What is its share price, evaluated by discounted free cash flow model?

- A) \$6.96
B) \$7.41
C) \$8.20
D) \$9.65
E) \$10.13
10. Use the following information to answer the question below.

Firm	Portfolio Weight	Volatility	Correlation with Market Portfolio
IBM	0.25	14%	0.7
GE	0.35	18%	0.6
Citi	0.40	15%	0.5

The volatility of the market portfolio is 10%, the expected return on the market is 8%, and the risk-free rate of interest is 3%.

The expected return on the portfolio of the three stocks is closest to:

- A) 5.1%.
B) 10.4%.
C) 6.8%.
D) 9.6%.
E) 7.6%.

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共 10 頁，第 5 頁 *請在【答案卷、卡】作答

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。

11. Giant Conglomerate Company has three divisions. Suppose the expected growth rate of each division's free cash flow is constant forever.

Division of Giant Conglomerate Co.	Asset Beta	Next Period's Expected Free Cash Flow (\$mm)	Expected Growth Rate
Automotive Retail	1.4	400	5.0%
NB Manufacture	1.1	525	2.5%
Electric Utility	0.8	600	3.0%

The risk-free rate of interest is 3% and the market risk premium is 5%.
The overall cost of capital for the Giant Conglomerate Co. is closest to:

- A) 8.17%.
 - B) 8.05%.
 - C) 8.81%.
 - D) 9.32%.
 - E) 7.92%.
12. You want a portfolio beta of 1.1. Currently, your portfolio consists of \$1,000 invested in Stock A with a beta of 1.4 and \$3,000 in Stock B with a beta of .6. You have another \$4,000 to invest and want to divide it between Stock C with a beta of 1.6 and a risk-free asset. How much should you invest in the risk-free asset to obtain your desired beta?
- A) \$700
 - B) \$1,000
 - C) \$1,250
 - D) \$500
 - E) \$300

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13. Martin Co. has 25,000 shares of common stock outstanding with a beta of 1.4, a market price of \$32 a share, and a dividend yield of 5.8 percent. Dividends increase by 4.1 percent annually. The tax rate is 21 percent and all interest is tax deductible. The firm also has \$450,000 of debt outstanding that is selling at 102 percent of par that has a yield to maturity of 6.8 percent. The firm is considering a project that has the same risk level as the firm's current operations, an initial cost of \$308,000 and cash inflows of \$52,500, \$155,000, and \$225,000 for Years 1 to 3, respectively. What is the NPV of the project?
- A) \$12,515
 - B) \$18,495
 - C) \$14,511
 - D) \$10,157
 - E) \$20,718
14. Which of the following statements is wrong?
- A) A risk aversion Investor will choice one of portfolios sets on efficient frontier.
 - B) The slope of capital allocate line (CAL) measures the risk premium per unit of systemic risk.
 - C) Investors find the efficient frontier of risky assets and find the CML with risk-free asset. This step is not related to personal characteristics.
 - D) CML shows the relation of portfolio total risk and return.
 - E) Only well-diversified portfolio line on CML, but all individual securities or possible portfolio line on SML.

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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。

15. Which one of the following statements is true?
- A) Highly positive serial correlations are indicators of market efficiency.
 - B) Abnormal returns limited to the announcement date are indicators of market inefficiency.
 - C) Studies seem to indicate stock markets are semistrong but not strong form efficient.
 - D) Insider trading does not offer any advantages if the financial markets are weak form efficient.
 - E) The mutual funds do not outperforming the market. This supports weak form efficient.
16. E-space Enterprises expected to have free cash flow in the coming year of \$4 million, and this free cash flow is expected to grow at a rate of 3% per year thereafter. E-space has an equity cost of capital of 13%, a debt cost of capital of 7%, and it has a 21% corporate tax rate. If E-space currently maintains a .5 debt to equity ratio, then the value of E-space 's interest tax shield is closest to:
- A) \$3 million.
 - B) \$6 million.
 - C) \$9 million.
 - D) \$12 million.
 - E) \$15 million.
17. T-rex co. has zero debt and an overall cost of capital of 13.6 percent. The firm is considering a new capital structure with 40 percent debt. The interest rate on the debt would be 7 percent and the corporate tax rate is 21 percent. What would be the cost of equity with the new capital structure?
- A) 16.89 percent
 - B) 16.15 percent
 - C) 17.08 percent
 - D) 17.26 percent
 - E) 18.19 percent

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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。

18. Johnson Co. is considering a new project with revenue of \$325,000 for the indefinite future. Cash costs are 63 percent of the revenue. The initial cost of the investment is \$525,000. The tax rate is 21 percent and the unlevered cost of equity is 17 percent. What is the net present value of the project?
- A) \$24,810
 - B) \$43,347
 - C) \$68,165
 - D) \$33,809
 - E) \$21,729
19. AT.T's has 250,000 shares of stock outstanding, \$400,000 in perpetual annual earnings, and a discount rate of 16 percent. The firm is considering a new project that has initial costs of \$550,000 and annual perpetual cash flows of \$60,000. How many new shares must be issued to fund the new project? Ignore taxes.
- A) 34,650
 - B) 59,140
 - C) 45,000
 - D) 36,128
 - E) 54,209
20. TSC co. has a machine which costs \$281,128 and it would be depreciated using the straightline method by a leasing firm over a period of 3 years. Both the book value and the market value would be zero at the end of the 3 years. Both the lessor and the lessee have a tax rate of 21 percent. What is the NPV of the lease relative to the purchase to the lessor if the applicable pretax cost of borrowing is 7 percent and the lease payments are set at \$102,000 annually for 3 years?
- A) -\$1,0787
 - B) -\$9,660
 - C) \$427
 - D) \$885
 - E) \$41

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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。

21. The current market value of the assets of Giant Inc. is \$90 million, with a standard deviation of 20 percent per year. The firm has zero-coupon bonds outstanding with a total face value of \$45 million. These bonds mature in 2 years. The risk-free rate is 3 percent per year compounded continuously. What is the value of d_1 ?
- A) 3.09
 - B) 3.58
 - C) 2.41
 - D) 2.36
 - E) 2.80
22. A convertible bond pays annual coupons, has a coupon rate of 8 percent, and matures in 15 years. The face value is \$1,000 and the conversion ratio is 45. The stock currently sells for \$20.2 a share. Similar nonconvertible bonds are priced to yield 9 percent. What is the minimal value of the convertible bond?
- A) \$895.2
 - B) \$912.1
 - C) \$1,000
 - D) \$919.4
 - E) \$909.0
23. A bond has \$1,000 face value with annual coupon payments, a coupon rate of 10 percent, a maturity of 4 years, and a yield to maturity of 8 percent. What is the duration of the bond?
- A) 3.71 years
 - B) 3.62 years
 - C) 3.50 years
 - D) 3.83 years
 - E) 3.43 years

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24. Sea Food Co. has total annual sales of 438,000 units, a carrying cost per unit of \$2 per year, and restocking costs of \$48 per order. What is the Economic order quantity (EOQ)?
- A) 4,204 units
 - B) 3,826 units
 - C) 3,963 units
 - D) 4,126 units
 - E) 4,585 units
- 25 GE, a U.S. Corporation, is considering a new project located in Great Britain. The expected free cash flows from the project are detailed below:

Year	Free Cash Flow (£ millions)
0	-30
1	10
2	14
3	18

You know that the spot exchange rate is $S = \$1.37/£$. In addition, the risk-free interest rate on dollars and pounds is 5.4% and 4.6% respectively. Assume that these markets are internationally integrated and the uncertainty in the free cash flow is not correlated with uncertainty in the exchange rate. You have determined that the dollar WACC for these cash flows is 10.2%.

What is the U.S. dollar present value of the project?

- A) \$14.6
- B) \$29.1
- C) -\$3.6
- D) -\$9.4
- E) \$6.3