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國立清華大學 113 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：5003

考試科目：財務管理

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 *請在【答案卡】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. Which of the following statements is Wrong?

A) The sum of all future discounted free cash flows model is the value of the firm, enterprise value.

B) The free cash flow (FCF) is that the firm has available to pay both equity and debt holders.

C) The NPV of any individual project represents its contribution to the firm's enterprise value.

D) To evaluate stock price, we may add all the discounted future dividends, with the rate based on the weighted average cost of capital of both debt and equity.

E) The dividend yield is the percentage return the investor expects to earn from the dividend paid by the stock.

2. Which of the following statements is True?

A) Non-deliverable forward contracts (NDF) usually be settled by actual delivery.

B) To hedge receivables denominated in foreign currency, corporations can purchase currency futures or currency call options.

C) To hedge project bidding with foreign currency to lock in the dollar cost of potential expenses, it is better to use currency futures rather options.

D) Financial institutions can attempt to benefit from expected appreciation (depreciation) of a currency by purchasing (borrowing) that currency.

E) A straddle is appropriate when there will be a small move in a currency but does not know the direction.

3. Which of the following statements is False?

A) A country with fixed exchange rate system is more insulated from inflation or unemployment of other countries.

B) A country with freely floating system is can adversely affect the country initially with high inflation or high unemployment.

C) Interest Rates of Pegged Currencies must be aligned with rates of the currency to which it is tied.

D) The European Monetary Policy prevents any individual EU country from solving local economic problems with its own unique monetary policy.

E) A weak currency may reduce unemployment and lead to higher inflation.

4. Assume that Sunny Corporation would generate the following free cash flows over the next five years:

Year	1	2	3	4	5
CFC($million)	33	75	35	46	74

After five years, the free cash flows would grow at 4% per year. Assume that the weighted average cost of capital of is 6.8%; the required rate of stockholder is 10%; the required rate of bondholder is 5.5%. Sunny Co. has 16 million shares outstanding, $43 million excess cash, and debt of $414 million. What is its share price?

A) $38.8
B) $36.1
C) $236.1
D) $111.1
E) $113.8

5. The Timber Mill has total assets of $992,800, current liabilities of $49,700, dividends paid of $12,000, net sales of $68,400, and net income of $55,400. Assume 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 5 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) $3,200
B) −$13,490
C) −$17,520
D) $1,585
E) $10,582

6. You are evaluating an income generating property. Net rent is received at the end of each year. The first year's rent is expected to be $8,500, and rent is expected to increase 6% each year. What is the present value of the estimated income stream over the first 8 years if the discount rate is 12%?

A) $52,425
B) $52,029
C) $50,472
D) $34,092
E) $34,706

7. You consider 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. Suppose you have the right to pay loan, principle and interest, off early before the end of year 5. If you want to pay all the loan clearly in the end of year three, how much should you pay in the end of year 3?

A) $1,179
B) $3,253
C) $1,285
D) $3,547
E) $4,539

8. Alex planned to purchase a property for $ 16,000,000, and just paid 25 percent down in cash. He would like finance the balance for 30 years at 3.5 percent, compounded monthly. Which of the following would be the closest in amount of each monthly mortgage payment?

A) $38,978
B) $53,885
C) $57,290
D) $71,595
E) $71,840

9. Solar Auto has planned to invest a new product. The required investment on January 1 of this year is $115 million. The company will depreciate the investment to zero with the straight-line method over four years. The investment has no resale value after completion of the project. The tax rate of the company is 21 percent. The price of the product will be $415 per unit, in real terms, and will not change over the life of the project. Labor costs for Year 1 will be $16 per hour, in real term, and will increase at 2 percent per year in real terms. Energy costs for Year 1 will be $4 per physical unit, in real term, and will increase at 3 percent per year in real term. The inflation rate is 5 percent per year. Revenues would be received and costs would be paid at year-end. Refer to the following table for the production schedule:

	Year 1	Year 2	Year 3	Year 4
Physical production, in units	150,000	165,000	180,000	155,000
Labor input, in hours	1,120,000	1,200,000	1,360,000	1,280,000
Energy input, physical units	210,000	225,000	255,000	240,000

The real discount rate for the project is 4 percent. Which of the following is the closest in value of the NPV of this project?

A) $21,173,323
B) $33,495,585
C) $35,849,921
D) $36,398,975
E) $39,423,154

10. Vika Enterprises considers a new project that would require $325,000 for fixed assets, $160,000 for inventory, and $45,000 for accounts receivable. Short-term debt is expected to increase by $90,000. The project has a life of 5 years. The fixed assets would be depreciated straight-line to a zero book value over the life of the project. At the end of the project, the fixed assets can be sold for 25 percent of their original cost and the net working capital would return to its original level. The project is expected to generate annual sales of $554,000 with costs of $430,000. The tax rate is 21 percent and the required rate of return is 15 percent. What is the net present value of this project?

A) -$8,691
B) $73,238
C) $81,047
D) $32,518
E) $23,222

11. A bond that pays $55 semiannually coupon. The effective semiannual interest rate is 5%. The face value is $1,000 and the bond matures in 3 years. Which of the following is the closest in value of the annual current yield?
A) 10.3%
B) 10.4%
C) 10.5%
D) 10.6%
E) 10.7%

12. Assume a project with free cash flows in one year of $90,000 in a weak economy or $117,000 in a strong economy, with each outcome being equally likely. The initial investment required for the project is $80,000, and the project's cost of capital is 15% and the risk-free interest rate is 8%. Suppose that you borrow only $45,000 in financing the project. According to MM proposition II, what is the firm's equity cost of capital?
A) 17%
B) 20%
C) 22%
D) 25%
E) 27%

13. Ray has $1,000. The expected return and standard deviation of Garde Co. returns are 14% and 20%, respectively. The expected return of risk-free asset is 10%. Suppose that, Ray borrows $200 at the risk-free rate, and invests $1,200 in Garde. The expected return and standard deviation of return of this investment would be:
A) 10.3% and 24%
B) 14.8% and 24%
C) 15.4% and 20%
D) 14.6% and 20%
E) None of the above

14. The Wooper Co. has expected earnings before interest and taxes of $17,700, an unlevered cost of capital of 13.4 percent, and debt with both a book and face value of $25,000. The debt has an annual 6.2 percent coupon. If the tax rate is 21 percent, what is the value of the firm?
A) $109,601
B) $132,090
C) $114,194
D) $105,667
E) $145,403

15. Assume A machine that costs $280,000 would be depreciated using the straight-line method by a leasing firm over a period of 4 years. Both the book value and the market value would be zero at the end of the 4 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 $102,100 annually for 4 years?
A) $76,882
B) $282,526
C) $114,331
D) $65,834
E) $54,016

16. A convertible bond is selling for $967, matures in 15 years, has a $1,000 face value, pays interest semiannually, and has a coupon rate of 8 percent. Similar non-convertible bonds are priced to yield 4.2 percent per six months. The conversion ratio is 20. The stock currently sells for $47.50 a share. What is the convertible bond's option value?
A) -$2.92
B) $0.76
C) $7.27
D) $8.95
E) $17.00

17. Assume A CEO is being granted at-the-money options. The current underlying stock price is $50, the continuously compounded risk-free rate is 5 percent, and the variance on the stock's return is .04. The options expire in 5 years. If the CEO had negotiated a larger salary and 10,000 options, which of the following is the closest in value of all those options?

The following table provides the information about cumulative distribution function of standard normal distribution.

x	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0	0.5	0.50399	0.50798	0.51197	0.51595	0.51994	0.52392	0.5279	0.53188	0.53586
0.1	0.53983	0.5438	0.54776	0.55172	0.55567	0.55962	0.56356	0.56749	0.57142	0.57535
0.2	0.57926	0.58317	0.58706	0.59095	0.59483	0.59871	0.60257	0.60642	0.61026	0.61409
0.3	0.61791	0.62172	0.62552	0.6293	0.63307	0.63683	0.64058	0.64431	0.64803	0.65173
0.4	0.65542	0.6591	0.66276	0.6664	0.67003	0.67364	0.67724	0.68082	0.68439	0.68793
0.5	0.69146	0.69497	0.69847	0.70194	0.7054	0.70884	0.71226	0.71566	0.71904	0.7224
0.6	0.72575	0.72907	0.73237	0.73565	0.73891	0.74215	0.74537	0.74857	0.75175	0.7549
0.7	0.75804	0.76115	0.76424	0.7673	0.77035	0.77337	0.77637	0.77935	0.7823	0.78524
0.8	0.78814	0.79103	0.79389	0.79673	0.79955	0.80234	0.80511	0.80785	0.81057	0.81327
0.9	0.81594	0.81859	0.82121	0.82381	0.82639	0.82894	0.83147	0.83398	0.83646	0.83891
1	0.84134	0.84375	0.84614	0.84849	0.85083	0.85314	0.85543	0.85769	0.85993	0.86214
1.1	0.86433	0.8665	0.86864	0.87076	0.87286	0.87493	0.87698	0.879	0.881	0.88298
1.2	0.88493	0.88686	0.88877	0.89065	0.89251	0.89435	0.89617	0.89796	0.89973	0.90147
1.3	0.9032	0.9049	0.90658	0.90824	0.90988	0.91149	0.91308	0.91466	0.91621	0.91774
1.4	0.91924	0.92073	0.9222	0.92364	0.92507	0.92647	0.92785	0.92922	0.93056	0.93189
1.5	0.93319	0.93448	0.93574	0.93699	0.93822	0.93943	0.94062	0.94179	0.94295	0.94408
1.6	0.9452	0.9463	0.94738	0.94845	0.9495	0.95053	0.95154	0.95254	0.95352	0.95449
1.7	0.95543	0.95637	0.95728	0.95818	0.95907	0.95994	0.9608	0.96164	0.96246	0.96327

A) $92,323
B) $112,658
C) $120,340
D) $131,124
E) $145,696

18. Flareone Enterprises expects to have free cash flow in the coming year of $8 million, and this free cash flow is expected to grow at a rate of 3% per year thereafter. Flareone has an equity cost of capital of 10%, a debt cost of capital of 5%, and it has a 21% corporate tax rate. If Flareone currently maintains a 0.8 debt to equity ratio, which of the following is the closest in amount of Flareone's interest tax shield?

A) $0 million
B) $6.57 million
C) $12.32 million
D) $71.20 million
E) $18.13 million

19. Winget Oil considers an investment in a new project with an unlevered cost of capital of 11%. Winget's corporate tax rate is 21% and its debt cost of capital is 6%. The project has free cash flows of $25 million per year which are expected to increase by 3% per year. If Winget adjusts its debt continuously to maintain a constant debt-equity ratio of 50%, then which of the following is the closest in value of this new project:

A) $184 million
B) $189 million
C) $313 million
D) $330 million
E) $360 million

20. Carto Co. will receive S$100,000 in one year. Now, the spot rate of Singapore dollar is $0.6, and the one-year forward rate of the Singapore dollar is $0.62. Carto estimated a probability distribution for the future spot rate in one year as follows:

Future Spot Rate	Probability
$0.61	20%
0.63	50
0.67	30

One-year put options on Singapore dollars are available, with an exercise price of $0.63 and a premium of $0.04 per unit. One-year call options on Singapore dollars are available with an exercise price of $0.60 and a premium of $0.03 per unit. Assume the following money market rates

	U.S.	Singapore
Deposit rate	8%	5%
Borrowing rate	9	6

Given this information, which of the following decisions about how to hedge its receivables position is most appropriate, receiving the most expected cash flows in dollars?

A) Forward hedge
B) Money market hedge
C) Currency options hedge
D) Unhedged strategy
E) Put option hedge

21. NF Co. expects to receive 100,000 British pounds in one year and expects the spot rate of British pound to be $1.49 in a year. It decides to avoid exchange rate risk by hedging its receivables. The spot rate of the pound is quoted at $1.51. The strike price of put and call options are $1.54 and $1.53 respectively. The premium on both options is $0.03. The one-year forward rate exhibits a 2% forward premium. Assume that there are no transaction costs. What is the best possible hedging strategy and how many U.S. dollars NF Co. will receive under this strategy?

A) buy a put option and receive $158,000.

B) sell pounds forward and receive $157,000.

C) sell a call option and receive $156,000.

D) sell a put option and receive $157,000.

E) sell pounds forward and receive $154,020.

22. Suppose you are a financial advisor and your client, who is currently investing only in the Taiwan stock market, is considering diversifying into the U.S. stock market. At the moment, there are neither particular barriers nor restrictions on investing in the U.S. stock market. Your client would like to know what kind of benefits can be expected from doing so. The parameter values are: returns in Taiwan and U.S. stock market, $\bar{R}_{TW} = 1.26\%$, $\bar{R}_{US} = 1.23\%$, standard deviation of returns, $\sigma_{TW} = 4.43\%$, $\sigma_{US} = 5.55\%$, monthly risk-free interest rate: $R_f = 0.5\%$, correlation coefficient $\rho_{TW,US}=0.58$.
Assume that investors can take a short (negative) position in either market. Which of the following is the 'optimal' international portfolio comprised of the Taiwan and U.S. markets? What are the weights on Taiwan and U.S. market in the optimal portfolio?

A) $W_{TW} = 0.13$ and $W_{US} = 0.87$
B) $W_{TW} = 0.79$ and $W_{US} = 0.21$
C) $W_{TW} = 1.00$ and $W_{US} = 0.00$
D) $W_{TW} = 0.34$ and $W_{US} = 0.66$
E) $W_{TW} = 0.47$ and $W_{US} = 0.53$

23. According previous question, calculate the extra return that T.W. investors can expect to capture at the 'T.W.-equivalent' risk level, $\sigma_{TW} = 4.43\%$. Which of the following is the closest in value of the extra return?
A) 0.02%
B) 0.06%
C) 0.10%
D) 0.13%
E) 0.26%

24. John believes that the Japanese yen will fluctuate widely against U.S. dollar in the coming moth. Currently, one-month call options on Japanese yen (¥) are available with a strike price of $0.0085 and a premium of $0.0006 per unit. One-month put options on Japanese yen are available with a strike price of $0.0084 and a premium of $0.0005 per unit. One option contract on Japanese yen contains 6.25 million yen. Assume John decides to construct a long strangle in yen. What are the lower and the Upper break-even (BE) points of this strangle, respectively?
A) $0.0072 and $0.0097
B) $0.0082 and $0.0086
C) $0.0080 and $0.0090
D) $0.0073 and $0.0096
E) $0.0067 and $0.0092

25. According previous question, assume John decides to construct a long strangle in yen. What is John's total profit or loss of trading one unit of strangle (contracts) if the value of yen in one month is $0.0090?
A) -$1,250
B) -$4,375
C) -$3,750
D) $3,125
E) $1,250