

東吳大學 100 學年度碩士班研究生招生考試試題

第 1 頁，共 6 頁

系級	財務工程與精算數學系碩士班 A 組	考試時間	100 分鐘
科目	財務管理	本科總分	100 分

一、單選題 (共 15 題，每題 4 分，共計 60 分)

1. A random walk process consists of the toss of a fair coin at the end of each day. If the outcome is heads stock price increases by 1.35% and if the outcome is tails the stock price decreases by 0.85%. What is the drift of such a process?
A. +0.25%
B. -0.75%
C. +1.25%
D. +1.1%
2. A firm has zero debt in its capital structure. Its overall cost of capital is 10%. The firm is considering a new capital structure with 50% debt. The interest rate on the debt would be 8%. Assuming there are no taxes its cost of equity capital with the new capital structure would be:
A. 8%
B. 13%
C. 12%
D. 10%
3. A firm has a debt-to-equity ratio of 1.0. If it had no debt, its cost of equity would be 12%. Its cost of debt is 10%. What is its cost of equity if there are no taxes?
A. 21%
B. 18%
C. 14%
D. 16%
4. If a firm borrows \$50 million for one year at an interest rate of 12%, what is the Present Value of the interest tax shield? Assume a 30% tax rate. (Approximately.)
A. \$1.364 million
B. \$1.5 million
C. \$1.0 million
D. \$1.607 million

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5. (following the above question) If a firm Permanently borrows \$50 million at an interest rate of 12%, what is the present value of the interest tax shield? Assume a 30% tax rate.

- A. \$50.0 million
- B. \$25.0 million
- C. \$15.0 million
- D. \$1.5 million

6. Relative to the underlying stock, a call option always has:

- A. A lower beta and a lower standard deviation of return
- B. A lower beta and a higher standard deviation of return
- C. A higher beta and a lower standard deviation of return
- D. A higher beta and a higher standard deviation of return

7. Using the following data for Golf Corporation to calculate the proportions of debt (D/V) and equity (E/V) for the firm that you would use for estimating the weighted average cost of capital (WACC):

market price/share	\$12
Book value/share	\$10
Liquidity value/equity	\$7.5
Number of shares outstanding	100 million
market price/bond	\$800
Face value/bond	\$1,000
Liquidity value/bond	\$450
Number of bonds outstanding	1 million

- A. 40% debt and 60% equity
- B. 50% debt and 50% equity
- C. 37.5% debt and 62.5% equity
- D. 45.5% debt and 54.5% equity

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8. Considering the following three stocks, which stock is the most valuable? Assume the market capitalization rate for each stock is 10%.
- A. Stock A is expected to provide a dividend of \$11 a share forever.
 - B. Stock B is expected to pay a dividend of \$6 next year. Thereafter, dividend growth is expected to be 5% a year forever.
 - C. Stock C is expected to pay a dividend of \$6 next year. Thereafter, dividend growth is expected to be 40% a year for 3 years (i.e., until year 4) and zero thereafter.
 - D. Both Stock A and B are preferred.
9. The net present value of a project depends upon:
- A. Company's choice of accounting method
 - B. Manager's tastes and preferences
 - C. Project's cash flows and opportunity cost of capital
 - D. All of the above
10. The efficient portfolios: I) Have only unique risk II) Provide highest returns for a given level of risk III) Provide the least risk for a given level of returns IV) Have no risk at all
- A. I only
 - B. II and III only
 - C. IV only
 - D. II only
11. Assuming investor A invests 60% of his funds in stock X and the balance in stock Y. The standard deviation of return X is 10%, and on Y it is 20%. Calculate the variance of portfolio returns assuming correlation between X and Y is 0.5.
- A. 0.0100
 - B. 0.0148
 - C. 0.0196
 - D. 0.0200

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12. The correlation between the efficient portfolio and the risk-free asset is:

- A. +1
- B. -1
- C. 0
- D. The information is insufficient.

13. If a stock is overpriced it would plot:

- A. Above the security market line
- B. Below the security market line
- C. On the security market line
- D. On the Y-axis

14. Calculate the expected rate of return on the stock using the two-factor APT model by the following data for a stock.

risk-free rate	4%
factor-1 beta	1.5
factor-2 beta	0.5
factor-1 risk-premium	10%
factor-2 risk-premium	4%

- A. 17%
- B. 21%
- C. 13%
- D. 10%

15. A bond has face value of \$1,000, coupon rate of 0%, yield to maturity of 9% and 10 years to maturity.

The duration of this bond is:

- A. 6.7 years
- B. 7.5 years
- C. 9.6 years
- D. 10.0 years

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二、計算題 (2 大題，每大題 10 分，每小題 5 分，共計 20 分)

每小題之計算過程與答案皆正確才計分。

1. 老董公司擁有以下兩個不同的專案投資機會：

投資專案	現金流量			
	C0	C1	C2	IRR(%)
A	-400	250	300	23
B	-200	140	179	36

假設兩專案之資金成本皆為 9%。則老董公司應如何選擇上述兩個投資機會。

- (1) 若老董公司總經理直接挑選 IRR 較高的 B 專案，合適嗎？為什麼？
- (2) 應如何修正 IRR 方法，並計算出應選擇哪個投資專案較佳？

2. A 公司擁有下列資本結構：

Security	Beta	Total Market Value
Debt	0	100
Preferred stock	0.2	100
Common stock	1.2	200

- (1) 利用 CAPM (Capital Asset Pricing Model) 計算該公司總資產之 Beta 值為何？
- (2) 若該公司希望在不影響公司風險的情況下擴展營運規模，則對於該公司投資之折現率應設定為多少？(已知無風險利率：5%，市場風險溢酬：6%)

三、簡答題(2 大題，每題 10 分，每小題 5 分，共計 20 分)

簡答題請簡明扼要回答，每小題務必不超過 15 行。

1. 請繪圖並簡述持有下列投資組合之風險與報酬。

- (1) 同時買進 A 股票之買權與賣權各一單位，兩者之到期日與執行價格皆相同。
- (2) 買進執行價格高之 A 股票賣權，並賣出執行價格低之 A 股票賣權各一單位，兩者之到期日相同。

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2. 根據 Black-Scholes Pricing Formula 歐式買權與賣權之評價公式為：

$$C_0 = S_0 \cdot N(d_1) - K \cdot e^{-rT} \cdot N(d_2),$$

$$P_0 = K \cdot e^{-rT} \cdot N(-d_2) - S_0 \cdot N(-d_1),$$

where P_0 , C_0 , and S_0 are the values of put option, call option and stock, respectively. The T is time period to exercise date, K is the exercise price of option, r represents the risk free rate, and $N(\cdot)$ denotes the cumulative normal probability density function.

(1) 何謂買賣權平價理論 (put-call parity)。

(2) 請藉由式子推導證明 (或藉由到期損益及繪圖說明) 買賣權平價理論。