

Solutions - revised.

9.220
Paper Number 4

UNIVERSITY OF MANITOBA
Department of Accounting and Finance
Summer Evening Final Exam
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Multiple Choice Section

Instructions: Each of the following questions is followed by several suggested answers or completions. Select the best alternative and place the corresponding letter on the accompanying computerized answer sheet.

1. Which of the following attempts to explain the term structure of interest rates?
 - a. expectation hypothesis
 - b. liquidity preference theory
 - c. market segmentation theory
 - d. income - liquidity - expectation effect
 - e. all of the above

2. If you were to deposit a single sum of \$1,000 into a bank account at 10 percent interest:
 - i) Which would you use to calculate the ending balance in your account at the end of the tenth year?
 - a. present value of \$1.
 - b. compound value of \$1.
 - c. present value of an annuity of \$1.
 - d. compound value of an annuity of \$1.
 - e. b and d.

3. An annuity may be defined as:
 - a. a payment (or receipt) at a fixed interest rate.
 - b. a series of payments (or receipts) of unequal amounts.
 - c. a series of yearly payments (or receipts).
 - d. a series of equal payments (or receipts) at equal intervals.
 - e. none of the above.

4. Your 69 year old aunt has savings of \$28,000. She wants to decrease these savings by a constant amount each year for the next ten years, and have a zero balance remaining in her account by the time she reaches the age of 80. She earns 6 percent annually on her savings. Her first withdrawal will be one year from today. How much can she withdraw each year?

$\$28,000 = \frac{C}{.06} \left[1 - \frac{1}{(1.06)^{10}} \right]$

 - a. \$1,896
 - b. \$3,314
 - c. \$3,804
 - d. \$4,201
 - e. \$7,622

5. In a private placement with an insurance company, Balloon Corp. issued \$1 million worth of three-year 8 percent bonds. Interest is payable semi-annually. What were the proceeds of the issue if the going rate on similar bond issues was 10 percent?

Total BV $\frac{1M}{1000} = 1,000$ bonds issued

$\rightarrow r_1 = .10 \rightarrow \frac{EPK_1}{2} = \frac{.10}{2} = 0.05$

3 yrs = 6 semi-annual periods

$PV = \frac{40}{.05} \left[1 - \frac{1}{(1.05)^6} \right] + \frac{1000}{(1.05)^6}$

= \$949.24

Coupon rate is 8%
Coupons = 40

 - a. \$1,000,000
 - b. \$ 950,000
 - c. \$ 949,243 = price/bond x #bonds
 - d. \$1,049,000
 - e. none of the above

6. Continuous compounding of \$100 at 10 percent for 5 years is approximately equal to:

- a. $\$100 \times e^{10\% \times 5}$
- b. $\$100 \times e^{10\% \times 1}$
- c. $\$164.87$
- d. $\$518.47$
- e. a and c

7. The internal rate of return (IRR) is that discount rate which equates the present value of the expected future cash flows with:

- a. the present value of net returns.
- b. the cost of the initial outlay.
- c. the present value of future receipts
- d. the depreciated value of the old asset less the cost of the new asset.
- e. none of the above.

$$NPV = 0$$

$$0 = -C_0 + \underset{\text{or}}{PV(\text{future CFs})}$$

$$C_0 = PV(\text{future CFs})$$

8. When using the internal rate of return method, it is assumed that cash flows can be reinvested at:

- a. the cost of raising equity funds (shares)
- b. the cost of capital.
- c. the internal rate of return.
- d. the prevailing interest rate.
- e. all of the above.

9. A new project has the flowing real cash flows:

$$NCF_0 = -\$30, NCF_1 = +\$10, NCF_2 = +\$15, NCF_3 = +\$20.$$

The expected inflation rate is 5% a year and the real discount rate is 10%. What is the NPV?

- a. \$ 6.51
- b. \$10.40
- c. -\$10.40
- d. -\$16.50
- e. none of the above

$$NPV = -30 + \frac{10}{1.1} + \frac{15}{(1.1)^2} + \frac{20}{(1.1)^3} =$$

10. In financial management, risk is measured using the standard deviation of expected cash flows. The _____ the standard deviation, the _____ the probability distribution, and, accordingly, the lower the riskiness of the project's cash flows.

- a. smaller, wider
- b. higher, higher
- c. smaller, tighter
- d. greater, tighter
- e. smaller, flatter

11. Which of the following statements about risk is true?

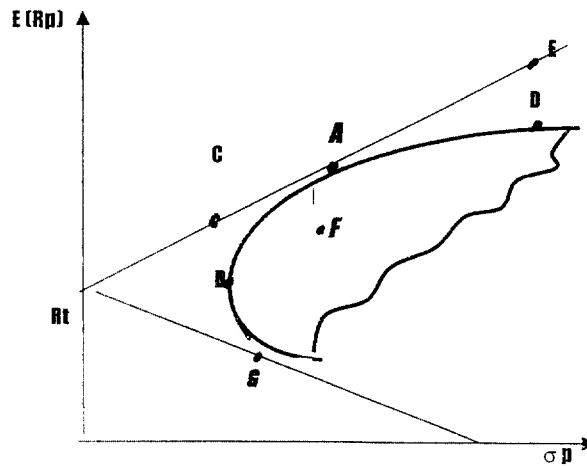
- a. risk requires an outcome less favourable than the expected value
- b. risk requires the possibility of more than one outcome
- c. risk is one of the determinants of the required return
- d. risk aversion is assumed to be the dominant behavioural characteristic
- e. all of the above statements are true

12. You have determined the following data on three stocks

Stock	Standard Deviation	Beta
A	0.15	0.79
B	0.25	0.61
C	0.20	1.29

As a risk minimizer you would choose Stock ___ if held individually and Stock ___ if held as part of a well-diversified portfolio.

- a. A;A
 b. A;B
 c. B;C
 d. C;A
 e. indeterminate
13. The least beneficial effect occurs when the correlation coefficient between two return streams is:
- a. +1.0
 b. -0.5
 c. 0
 d. -0.5
 e. -1.0
14. Consider the following diagram to answer the question below:



Which of the portfolios are efficient?

- a. D and G
 b. A, C and E
 c. A and E
 d. B, C and F
 e. All except for C

16. Consider the following statistics on securities x and y:

$$\sigma_x = 4\% \quad \sigma_y = 8\% \quad \rho_{xy} = .5$$

What is the variance of returns of a portfolio in which half is invested in x and other half in y?

$$\sigma_p^2 = .5^2(.04)^2 + .5^2(.08)^2 + 2(.5 \times .5)(.04)(.08)(.5) = 0.0028$$

- a. .07
b. .2025
c. 36%
 d. .28%
e. none of the above

17. Which of the following statements is true?

- either a. A firm's asset beta is a weighted average of its debt and equity beta (weighted by their optimal proportions)
 b. If the beta of debt is approximately zero then:
 $B \text{ equity} = \text{Bassets} \times [(\text{debt/equity})/\text{equity}]$
 c. only a) is true
 d. only b) is true
 e. both a) and b) are true

$$\beta_{ASSETS} = \frac{B}{B+S} \beta_D + \frac{S}{B+S} \beta_S$$

18. An option may apply to:

- a. debentures
b. equity issues outstanding
c. new issues of common shares
d. preferred shares
 e. all of the above

$$\text{So } \beta_S = \frac{(B+S)}{S} \beta_{ASSETS}$$

19. Suppose an investor sells a put option. What will happen if the share price on the exercise date exceeds the exercise price?

- a. the seller will need to deliver share to the owner of the option
 b. the seller is obliged to buy shares from the owner of the option
 c. the owner will not exercise his option
 d. the owner will exercise his option
e. cannot be determined

20. Which of the following might favour an increased dividend payment? *N/A*

- a. tax consideration
b. transactions costs
c. information effect
d. investor confidence
e. all of the above

21. An increase in which of the following is likely to decrease the firm's ability or *N/A* willingness to pay dividends?

- a. quick ratio
b. debt ratio
c. cash flows
d. returns on assets
e. none of the above

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$$= 0.0028$$

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22. The traditional position with respect to dividend policy suggests that the required returns on equity increases as the dividend payout ratio decreases. This argument is based on the assumption that: *N/A*
- a. investors are indifferent between dividends and capital gains
 - b. investors require that the dividend yield and the capital gains yield equal a constant
 - c. capital gains are taxed at a higher rate than are dividends
 - d. investors view dividends as being less risky than potential future capital gains
 - e. investors value a dollar of expected capital gains more highly than a dollar of expected dividends because of the lower tax rate on capital gains
23. A constant-payout-ratio dividend policy is generally not adopted by firms because of: *N/A*
- a. legal constraints
 - b. contractual constraints
 - c. transactions costs
 - d. none of the above
24. Each of the following statements regarding efficient markets is true except
- a. A person who believes in the strong form of market efficiency believes that access to "insider" information cannot result in abnormal profits in the long run.
 - b. The semi-strong form of the efficient market hypothesis (EMH) states that investors cannot use either public or past information to make abnormal profits over the long run.
 - c. The weak form of the efficient markets hypothesis (EMH) states that investors cannot use past information to make abnormal profits over the long-run.
 - d. A person who believes in the weak form of market efficiency also believes, by implication, that technical analysis (charting etc.) does not work.
 - e. Studies in serial correlation generally support the random walk theory.
 - f. Mutual fund managers consistently out-perform the market because they have access to hordes of analysts who can find untapped sources of publicly available information.
 - g. If the weak form of market efficiency is contradicted, then the semi-strong form of market efficiency must also be contradicted.
25. A six-month American call option on non-dividend-paying stock has an exercise price of \$65. The underlying stock price is currently \$58, and the continuously compounded risk-free interest rate is 5% per annum. The lower bound for the price of this American call option is
- E = \$65*
r_f = 5%
S₀ = \$58
lower bound = $\begin{bmatrix} \text{Max} \\ \text{Lower} \end{bmatrix} [S_t - E] = \frac{\$}{0}$
- a. \$0
 - b. \$7.00
 - c. \$6.98
 - d. \$58.00
 - e. \$65.00
 - f. is always greater than the exercise price of \$65.
 - g. is indeterminate because it is an American option.
 - h. none of the above.

26. The writer (seller) of an American call option
- a. is said to be in a 'long' position.
 - b. is said to be in a 'short' position.
 - c. hopes that the stock price will not be greater than the exercise price for the life of the option.
 - d. hopes that the stock price will be greater than the exercise price for the life of the option.
 - e. will earn a premium from sale of the option.
 - f. hopes to sell the underlying stock and receive the exercise price.
 - g. is both a) and f).
 - h. is both b) and c).
 - i. is b), c) and e).
 - j. is a), e) and f).

27. European call and put options on a stock both have an exercise price of \$60 and an exercise date in three months. The underlying stock price is currently \$61, and the present value of a risk-free asset with face value of \$60 and with maturity in three months is \$58. The call option sells for \$9 and the put option sells for \$4. To gain an arbitrage profit one should
- $\overset{\sim E}{S_0} = 61$
 $PV(E) = 58$
- $C_0 = 9$ $E = 60$ $P_0 = 4$
- PUT-CALL PARITY
- $$S_0 + P_0 - C_0 = PV(E)$$
- $$LHS = \$61 + \$4 - \$9 = \$56$$
- $$RHS = \$58$$
- Since $LHS < RHS$
- Long the cheaper security) and
Short the more expensive one.
- So: LHS Long
Long Put
Short Call
and
RHS Short
Short T-Bill
- a. buy (long) the stock, buy (long) the put, buy (long) the call, and buy (long) the risk-free asset.
 - b. buy (long) the stock, buy (long) the put, buy (long) the call, and sell (short) the risk-free asset.
 - c. buy (long) the stock, buy (long) the put, sell (short) the call, and buy (long) the risk-free asset.
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