# Department of Finance and Investment Management

# Investment Planning

## FPL05X7

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## Supplementary Assessment Opportunity

## 18 July 2014

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**Time: 2 hours 45 minutes**                    **Marks: 120**

**Assessors:**          Ms. Hester Van der Merwe

**Internal moderator:** Mr Niël Oberholzer
**External moderator:** Mr Naeem Badat

**INSTRUCTIONS:**

- This paper consists of 14 pages
- Answer ALL questions in the **answer book** provided.
- Silent, non-programmable calculators may be used, unless otherwise instructed.
- Where applicable, show all calculations clearly.
- Answers with Tippex and in pencil will **not** be marked.
- Scratch out all open spaces and empty pages.
- Round all calculations to the nearest rand.
- Good luck!

| Question | Topic | Marks | Time |
|---|---|---|---|
| 1 | Multiple Choice (Section A) | 37 | 51 minutes |
| 2 | Multiple Choice (Section B) | 30 | 41 minutes |
| 3 - 10 | Longer Questions (Section C) | 53 | 73 minutes |
| | | 120 | 165 |

## Section A: Multiple Choice                    [37 x 1 = 37 Marks]

1.1    The characteristics of an extendable bond includes:
   a    Shorter term bond with right to postpone maturity; Bond issuer can take advantage of falling interest rates; Bond's behaviour changes from short term bond to long term bond depending on market rates.
   b    Long term bond with right to postpone maturity; Bond holder can take advantage of falling interest rates; Longer term can be chosen without increasing risk premium.
   c    Similar to convertible bonds; issuer offers shares in company at maturity; Lower risk for bond holder.
   d    Shorter term bond with right to postpone maturity; Bond holder can take advantage of falling interest rates; Bond's behaviour changes from short term bond to long term bond depending on market rates.

1.2    An investor considers buying a bond where he has the option of converting the bond to shares in a subsidiary company of the issuing company. Which of the following will he buy?
   a    Callable bond
   b    Exchangeable bond
   c    Convertible bond
   d    Extendable bond

1.3    Real assets in the economy include all but which one of the following?
   a    Land
   b    Buildings
   c    Consumer durables
   d    Common stock

1.4    Your client wishes to invest in a zero coupon bond with a par value of R1 000 000 with a term to maturity of 15 years. Calculate the purchase price of the bond if the current market rate is 7%.
   a    R 362 446
   b    R 131 367
   c    R 356 278
   d    R 596 890

1.5    Which of the following is not a money market security?
   a    Treasury bill
   b    Six month maturity certificate of deposit
   c    Ordinary share
   d    Banker's acceptance

1.6    Which of the following correctly describes asset allocation?
   a    Distribution of the investment portfolio among different countries and asset classes
   b    Analysis of the value of securities
   c    Choice of specific assets within each asset class
   d    None of the answers define asset allocation

1.7   Which one of the following best describes the purpose of derivative instruments?
   a       Qualification of risk
   b       Investing for a short time period to earn a small rate of return
   c       Investing for retirement
   d       Protection of an existing exposure

1.8   Which approach to portfolio construction starts with selecting attractively priced securities?
   a       Bottom-up
   b       Top-down
   c       Growth
   d       Side-to-side

1.9   _____ portfolio management calls for holding diversified portfolios without spending effort or resources attempting to improve investment performance through security analysis.
   a       Active
   b       Momentum
   c       Passive
   d       Market timing

1.10  Modest sales growth and small or negative profits are characteristic of which phase of industrial development:
   a       Pioneering development
   b       Rapidly accelerating growth
   c       Mature growth
   d       Stabilisation and market maturity

1.11  According to the international Fisher Effect, if the annual nominal USD interest rate is 2.01% and annual nominal JPY interest rate is 0% then the JPY should _____ relative to the USD over the next year:
   a       appreciate by 2.01%
   b       be unchanged
   c       depreciate by 2.01%
   d       none of the above

1.12  The NAV of which funds is fixed at R1 per share?
   a       Equity funds
   b       Money market funds
   c       Fixed income funds
   d       Commingled funds

1.13  A return of 15 % might actually be worse than a return of 10%
   a       In a bull market
   b       In a bear market
   c       On a risk adjusted basis
   d       None of the above

1.14  The term "excess returns" is commonly defined as
   a       Total portfolio returns minus the market rate
   b       Total portfolio returns minus the risk-free rate
   c       (portfolio returns minus the risk-free rate)/beta
   d       None of the above

1.15 Generally currency market makers in ZAR will demand wider bid-ask spreads as a result of:
a    Political instability in SA
b    Volatility of the ZAR
c    Lower liquidity of the currency
d    All of the above

1.16 According to the international Fisher effect, if the annual nominal USD interest rate is 2.5% and annual nominal EUR interest rate is 1% we expect that, relative to the USD, the EUR will _____ over the next year.
a    remain unchanged
b    depreciate by 1.5%
c    appreciate by 1.5%
d    none of the above

1.17 Derivative instruments aim to protect exposure by:
a    Containing any potential upside or downside (hedging), retaining the upside while limiting the downside (insurance) or aligning the exposure to future expectations (transformation).
b    Containing any potential upside or downside (transformation), retaining the upside while limiting the downside (hedging) or aligning the exposure to future expectations (insurance).
c    Containing all upside or downside (transformation), retaining the upside while limiting the downside (hedging) or aligning the exposure to future expectations (insurance).
d    Containing any potential downside (hedging), limiting the upside as well as the downside (insurance) or aligning the exposure to future expectations (transformation).

1.18 The following are features of exchange traded contracts, except for:
a    They are marked-to-market.
b    They are highly liquid
c    There is usually some default risk in an ET trade.
d    They are tradable financial instruments.

1.19 Among the various types of publicly-traded debt, trading is most active for:
a    Junk bonds
b    Municipal bonds
c    Corporate bonds
d    Treasury securities

1.20 An investor sells Blue Company shares short at 102 cents. He will use a _____ order to protect himself if the share price should _____.
a    stop buy      increase
b    stop loss     increase
c    stop loss     decrease
d    stop buy      decrease

1.21 The only difference between the Sharpe and Treynor approaches is that the Treynor approach evaluates excess returns based on:
　　a　　Total risk
　　b　　Unsystematic risk
　　c　　Systematic risk
　　d　　None of the above

1.22 Under the Jensen approach, if the market rate of excess returns is 6.03 %, a portfolio with beta of 0.7 should provide excess returns of:
　　a　　6.73
　　b　　8.614
　　c　　4.221
　　d　　There is not enough information to tell

1.23 A trader's margin account is used:
　　a　　During arbitrage to ensure liquidity
　　b　　During the mark-to-market process to ensure liquidity
　　c　　During arbitrage to ensure parties meet their obligations.
　　d　　During the mark-to-market process to ensure parties meet their obligations

1.24 The five main variables influencing the value of an option include the following:
　　a　　Strike price, liquidity, time to expiration, inflation rate and spot price.
　　b　　Spot price, volatility, strike price, time to expiration and interest rates.
　　c　　Volatility, spot price, strike price, time to expiration and inflation rate.
　　d　　Spot price, strike price, liquidity, interest rate and time to expiration.

1.25 An American call option on a non-dividend paying share should:
　　a　　Be exercised before the expiration date if sufficiently deep in the money
　　b　　Not be exercised before the expiration date as the holder is able to earn interest for a longer period of time
　　c　　Be exercised before the expiry date if the interest rate increases and spot price and volatility decrease.
　　d　　Not be exercised as potential income may be forfeited.

1.26 When measuring the performance of fund managers, the return measure commonly used is:
　　a　　The standard deviation
　　b　　The beta
　　c　　The alpha
　　d　　Total returns

1.27 Which of the following is true with regards to an index fund?
　　a　　Returns are adjusted for changes in the consumer price index
　　b　　Funds are invested in a mutual fund that attempts to replicate the performance of a major market index
　　c　　Investors are guaranteed returns equal to a major market index
　　d　　High commissions and management fees are charged because of attempts to beat the market

1.28 The capital market line (CML) as defined by the capital asset pricing model is characterized by all of the following except:

a   A straight line tangent to the efficient frontier
b   A straight line which includes the rate of return on a risk free asset
c   A point on the efficient frontier above which higher returns can be generated by borrowing funds without assuming more risk
d   All of the above are characteristics of the capital market line

1.29 Systematic risk is rewarded with a premium in the marketplace because:

a   That risk is peculiar to the stock or industry
b   It represents a random occurrence which could not have been foreseen
c   It is associated with market movements which cannot be eliminated through diversification
d   None of the above

1.30 When the USD is strong, the

a   amount of foreign currency that can be purchased per $1 decreases.
b   amount of dollars that can be purchased per ¥1 (one Japanese yen) increases.
c   dollar price of goods and services purchased from abroad rises.
d   none of the above

1.31 To protect the value of a bond portfolio against a rise in interest rates using interest rate futures, the portfolio owner could execute a:

a   Long hedge.
b   Weighted long hedge.
c   Short hedge.
d   None of the above.

1.32 Organised commodity exchanges do not trade:

a   Options on stock index futures.
b   Futures contracts on agricultural commodities.
c   Options on stock indexes.
d   Futures contracts on precious metals.

1.33 When marking the economic cycle, as a general rule:

a   A recession follows 2 negative quarters for GDP
b   An increase in inflation is followed by a recession
c   A recession follows an increase in the repo rate
d   None of the above

1.34 If the degree of operating leverage for a company is 2, it means that:

a   For every 2% change in sales, profits will change by 2% downwards
b   For every 2% change in sales, profits will change by 1% in the same direction (up or down)
c   For every 1% change in sales, profits will change by 1% downwards.
d   For every 1% change in sales, profits will change by 2% in the same direction (up or down)

1.35 Which of the following rules will help a company to survive rivalry between existing companies in an industry?
- a     Sustain average rates of return on capital invested
- b     Employ leverage to maximum effect.
- c     Be unique or be the cheapest
- d     All of the above

1.36 A 'naked' position refers to which of the following?
- a     The seller of a future does not hold the underlying asset
- b     The use of derivatives for speculation.
- c     A trader's margin account is below margin.
- d     The use of derivatives for hedging purposes

1.37 The balance sheet will supply the following information about a company:
- a     What resources the company controls and how it was financed
- b     Information about the operating performance
- c     A picture of the company's assets at a given point in time
- d     a and c only

## Section B Multiple Choice                          [15 x 2 = 30 Marks]

2.1.  Mr Ringo (age 47, marginal tax rate 40%) receives both a local and foreign dividend of R15 000 each.  What will the after tax foreign and local dividends be?

| | | | | |
|---|---|---|---|---|
| a | Foreign | R 3 750 | Local | R 2 250 |
| b | Foreign | R 12 750 | Local | R 12 750 |
| c | Foreign | R 11 250 | Local | R 15 000 |
| d | Foreign | R 11 250 | Local | R 12 750 |
| e | Foreign | R 12 750 | Local | R 13 500 |

2.2.  Two assumptions of technical analysis are that security prices adjust:
   a  gradually to new information, and prices are determined by the interaction between supply and demand
   b  rapidly to new information, and market prices are determined by the interaction between supply and demand
   c  rapidly to new information, and study of the economic environment provides an indication of future market movements
   d  gradually to new information, and study of the economic environment provides an indication of future market movements

2.3  Assume that the mid spot exchange rate for USDZAR is currently 9.4050, the SA inflation rate is 5.9% and the US inflation rate is 1.70%.  Calculate the expected future exchange rate in 2 years from now under relative PPP.
   a      7.9734
   b      61.4228
   c      8.6738
   d      10.1979

2.4.  Implications of the earnings model regarding the behaviour of P/E ratio's include:
   a     A share's P/E ratio will rise/fall as the short-term growth rate outlook rises/falls
   b     Constant growth prospects will cause the current P/E ratio to change
   c     R 5.16
   d     R 6.16

2.5.  You have calculated that your client, Chuck, will need an amount of R7 600 000 at retirement 34 years from now. According to his long term savings plan he will be able to invest R30 000 per year for the first 12 years, R40 000 per year for the next 8 years, and R50 000 per year for the following 14 years.  Assume all cash flows occur at the end of each year. If he earns an effective annual rate of return of 9%, will he be able to retire at his preferred standard of living?

   a   Yes, he will have an amount of  R8 367 349.85 at retirement
   b   No, he will only have an amount of  R1 702 992.38 at retirement
   c   No, he will only have an amount of  R6 789 395.56 at retirement
   d   Yes, he will have an amount of  R9 367 349.85 at retirement

2.6. If the FTSE'JSE Top 40 Index level is at 43 000. Calculate the value of a fund with a beta of 0.8 that can be hedged with 75 contracts.
   a  R25 800 000
   b  R57 330 000
   c  R40 312 500
   d  There is not enough information to do the calculation

2.7. The price of a 9 month European put-option on a non-dividend paying share when the share price is 90, strike price 97 and the risk free interest rate 8.5%. Calculate the bonds within which arbitrage would not be possible.

   a  $12.34 \leq p \leq 84.66$
   b  $1.24 \leq p \leq 91.24$
   c  $13.20 \leq p \leq 103.12$
   d  $43.45 \leq p \leq 3.88$

2.8. Helen falls in the 40% tax bracket and has the opportunity to invest in a tax-exempt municipal bond offering a 6.5% coupon. Calculate the return she will need from a taxable investment to get the same after tax return.
   a  13.80%
   b  16.25%
   c  9.10%
   d  10.38%

2.9. Assume a portfolio has the possibility of returning 6 %t, 8 %, 11 % or 13 % with likelihood of 20 %, 30 %t 30 % and 20 % respectively. The expected value of the portfolio is:
   a  10.0%
   b  9.0%
   c  9.3%
   d  9.5%

2.10. The following index is a value-weighted series. Towards which company may this index be weighted and why?

| THE COFFEE BEAN INDEX | | |
|---|---|---|
| COMPANY | Number of shares | Share price |
| Dark Roast Ltd | 12000 | 240 |
| Breakfast Blend Ltd | 7000 | 250 |
| Espresso Ltd | 4900 | 260 |
| Mild Roast Ltd | 8000 | 150 |

a  Towards Dark Roast Ltd (41%). The index may be biased towards the company with the largest market capitalisation.

b  Towards Espresso Ltd. (R260). The index may be biased towards the highest prices company.

c  The index will not be biased towards any company as each share carries an equal weight, regardless of price or market value.

d  There is not enough information to answer the question.

**Use the following information for Questions 2.11 – 2.15**

| N | Returns | | Probability | Returns | |
|---|---|---|---|---|---|
| | Chocolate Share | Cheese Share | | Chocolate Share | Cheese Share |
| 1 | 12 | 15 | 25% | 12 | 15 |
| 2 | 8 | 13 | 35% | 8 | 13 |
| 3 | 6 | 9 | 30% | 6 | 9 |
| 4 | -7 | 4 | 10% | -7 | 4 |

2.11. Calculate the covariance between the returns of Chocolate and Cheese shares
  a  115.25
  b  31.29
  c  28.21
  d  125.14

2.12. Calculate the variance for Chocolate and Cheese
  a  Chocolate   17.69    Cheese    50.69
  b  Chocolate   202.75   Cheese    70.75
  c  Chocolate   20.28    Cheese    7.08
  d  Chocolate   50.69    Cheese    17.69

2.13. Calculate the standard deviation for Chocolate and Cheese
  a  Chocolate   4.21     Cheese    7.12
  b  Chocolate   14.23%   Cheese    84.11%
  c  Chocolate   7.12%    Cheese    4.21%
  d  Chocolate   25.34    Cheese    8.84

2.14. Calculate the coefficient of variation for Chocolate and cheese
   a  0.96
   b  -0.96
   c  0.13
   d  -0.13

2.15. Assume a US investor, invested in a Japanese share enjoys capital appreciation of 18%, but the Yen declines by 12% *vis-a-vis* the dollar. After accounting for currency risk, the investor's portfolio shows:
   a     a loss of -3.8%
   b     a gain of 3.8%
   c     a gain of 32.2%
   d     a loss of 32.2%

## Section C: Calculation and theory questions  [53 Marks]

3   Study the graph and answer the following questions:



maturity
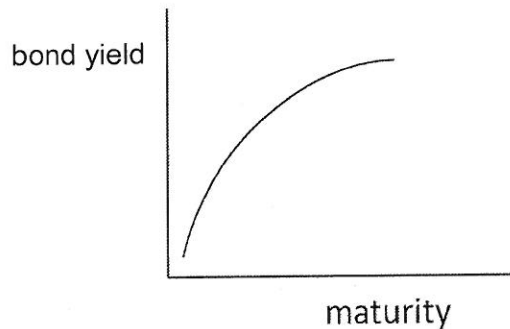
3.1   Identify the above graph and briefly motivate your answer.  [2]

3.2   Under which circumstances will analysts find a graph like the one above and which deductions regarding the economic cycle can he or she make from the graph?  [5]

4   Gemma approaches you for a second opinion regarding her investment portfolio. Her financial advisor constructed the portfolio according to her objective, risk profile and -capacity and now follows a buy-and-hold (passive) approach

4.1   Explain to her what the effect of this approach will be over a 7 year term.  [5]

| Asset class | Cash | Bonds | Property | Equity |
|---|---|---|---|---|
| Expected return | 2% | 3% | 12% | 14% |
| Portfolio allocation | 35% | 15% | 10% | 40% |
| Rand- value | R 350 000 | R 150 000 | R 100 000 | R 400 000 |

4.2   How will the approach differ if her adviser takes  [3]
i) a strategic allocation approach and
ii) a tactical allocation approach?

5   Contrast and compare value vs. growth investing in table format. Specifically refer to characteristics and risk of each approach.  [8]

6　　Use the information given below and calculate the horizon yield of the bond.
　　**[10]**

| Investor's time horizon | 5 years |
|---|---|
| Coupon | 7.50% |
| Price | R 120.00 |
| Term | 20 years |
| Payment frequency | 2 x per year |
| Semi-annual payments | 3.75 |
| Principal | 100 |
| Reinvestment rate: | 6.5% for the first 3 years |
| Reinvestment rate: | 8% for the last 2 years |
| Required yield to maturity for 5 year bond | 9.00% |

7.　　The business environment is influenced by other factors than the economy.　Briefly
　　discuss three influences.　　　　　　　　　　　　　　　　　　　　　　**[3]**

8　　Your client, Samuel (age 44 - teacher) has the following assets in his investment
　　portfolio:

| ASSET | VALUE |
|---|---|
| Retirement Annuity | R 200 000 |
| Grand Stand Property Fund | R 150 000 |
| Rental property (townhouse) | R 750 000 |
| Empty stand - next to townhouse | R 300 000 |
| Money Market Fund | R 50 000 |
| **Portfolio total:** | **R 1 450 000** |

　　Critically discuss the allocation to property in Samuel's portfolio.　　　　**[6]**

9   Use the following mid spot rates and determine whether triangular arbitrage is possible and if so, how much will the risk free profit be?   **[5]**

|          | Mid rate |
|----------|----------|
| AUDUSD   | 0.9245   |
| USDEUR   | 0.7465   |
| AUDEUR   | 0.6501   |

10  Levy enters into an 11 month futures contract on a non-dividend paying share. The share price is R109 and the risk free interest rate is 9.5%. The quoted market futures price is R118. Determine the appropriate arbitrage strategy and profit.   **[6]**