INSTRUCTIONS TO CANDIDATES

1. This paper consists of THREE (3) Sections and 13 pages (including a formula sheet):
   
   Section A is multiple-choice and all 25 questions are compulsory (50 marks).
   Section A must be answered using the separate multiple choice question (MCQ) answer sheet supplied. The MCQ answer sheet should only be filled in using the HB pencil.
   
   Section B contains 6 questions all of which are compulsory (100 marks).
   
   Section C is an essay question you are given 2 possible topics from which you must choose ONE to answer (50 marks).
   
   ANSWER SECTION C IN A SEPARATE BOOKLET
   
2. Carry two decimal places as a rule when completing the calculation questions. Incorrect rounding will be penalised.

3. Please make sure that your student number is on all your answer books, AND the MCQ response sheet.

4. The use of non-programmable calculators is permitted.

5. Best of Luck!
SECTION A – MULTIPLE CHOICE QUESTIONS [50 marks: 45 minutes]

Answer all MCQ’s on the MCQ Answer Sheet provided. Each question has only ONE correct answer. Correct answers score TWO marks. There is NO negative marking.

1. If an investor places a ________ order, the stock will be sold if its price falls to the stipulated level. If an investor places a ________ order, the stock will be bought if its price rises above the stipulated level.
   A. stop-buy; stop-loss
   B. Market; limit
   C. Stop-loss; stop-buy
   D. Limit; market

2. You sold short 300 shares of common stock at R30 per share. The initial margin is 50%. You must put up ________ in margin.
   A. R4500
   B. R6000
   C. R9000
   D. R10000

3. If a stock is correctly priced, then you know that ________.
   A. The dividend payout ratio is optimal
   B. The stock’s required return is equal to the growth rate in earnings and dividends
   C. The sum of the stocks expected capital gain and dividend yield is equal to the stock’s required rate of return
   D. The present value of growth opportunities is equal to the value of assets in place.

4. ________ is the amount of money per common share that could be realized by breaking up the firm, selling its assets, repaying its debt, and distributing the remainder to shareholders.
   A. Book value per share
   B. Liquidation value per share
   C. Market value per share
   D. Tobin’s Q
5. A firm is planning on paying its first dividend of R2 three years from today. After that, dividends are expected to grow at 6% per year indefinitely. The stock's required return is 14%. What is the intrinsic value of a share today?
   A. R25
   B. R16.87
   C. R19.24
   D. R20.99

6. Lifecycle Motorcycle Company is expected to pay a dividend in year 1 of $2, a dividend in year 2 of $3, and a dividend in year 3 of $4. After year 3, dividends are expected to grow at the rate of 7% per year. An appropriate required return for the stock is 12%. Using the multistage DDM, the stock should be worth ________ today.
   A. R63.80
   B. R65.13
   C. R67.95
   D. R85.60

7. A firm has a stock price of $54.75 per share. The firm's earnings are $75 million, and the firm has 20 million shares outstanding. The firm has an ROE of 15% and a plowback of 65%. What is the firm's PEG ratio?
   A. 1.5
   B. 1.25
   C. 1.1
   D. 1

8. Which of the following statements is true?
   A. At a support level, the technician would expect an increase in the demand for a stock
   B. At a resistance level, the technician would expect an increase in the demand for a stock
   C. At a resistance level, the technician would expect any price increase to reverse abruptly
   D. Both A and C are true

9. When the market breaks through the moving average line from below, a technical analyst would probably suggest that it is a good time to ________.
   A. Buy the stock
   B. Hold the stock
   C. Sell the stock
   D. Short the stock
10. According to technical analysts, a shift in market fundamentals will _______.
   A. Be reflected in stock prices immediately
   B. Lead to a gradual price change that can be recognized as a trend
   C. Lead to high volatility in stock market prices
   D. Leave prices unchanged

11. Random price movements indicate _______.
   A. Irrational markets
   B. That prices cannot equal fundamental values
   C. That technical analysis to uncover trends can be quite useful
   D. That markets are functioning efficiently

12. Evidence supporting semi strong form market efficiency suggests that investors should _______.
   A. Rely on technical analysis to select securities
   B. Rely on fundamental analysis to select securities
   C. Use a passive trading strategy such as purchasing an index fund of an ETF
   D. Select securities by throwing darts at the financial pages of a newspaper

13. Which of the following would be a viable way to earn abnormally high trading profits if markets are semistrong-form efficient?
   A. Buy shares in companies with low P/E ratios.
   B. Buy shares in companies with recent above-average price changes.
   C. Buy shares in companies with recent below-average price changes.
   D. Buy shares in companies for which you have advance knowledge of an improvement in the management team.

14. Behavioural finance models explain investor’s preferences for cash dividends as a result of _______.
   A. Mental accounting
   B. Taxation issues
   C. Overreaction
   D. Overconfidence

15. Your two best friends each tell you about a person they know who successfully started a small business. That’s it, you decide; if they can do it, so can you. This is an example of _______.
   A. Mental accounting
   B. Framing bias
   C. Conservatism
   D. Representativeness bias
SECTION B - CALCULATIONS

QUESTION ONE (30 marks: 27 minutes)

1.1. You are hired to conduct a fundamental analysis of Ashley Corporation. The company has a payout ratio of 75% and their required rate of return is 14%. Ashley Corporation expects earnings for next year to be R2.50 per share. Your friend, who is helping you with the valuation, has conducted a ratio analysis on the firm, and has given you the following ratios to work with:

<table>
<thead>
<tr>
<th></th>
<th>Ashley Corporation</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net profit margin</td>
<td>15%</td>
<td>13%</td>
</tr>
<tr>
<td>Total asset turnover</td>
<td>2</td>
<td>2.15</td>
</tr>
<tr>
<td>Financial leverage</td>
<td>1.2</td>
<td>1.0</td>
</tr>
</tbody>
</table>

1.1.1. Using the information given, calculate the intrinsic value of the share. 

1.1.2. Calculate the leading P/E ratio, and the PVGO of the firm. 

1.1.3. Based on the information given, as well as your results in 1.1.1. and 1.1.2. evaluate the financial position of Ashley Corporation. 

1.2. Acme Corporation achieved cash flow from operations of R1 000 000 in the latest financial year. R350 000 of the cash flow was invested in new fixed assets, whilst depreciation for the year amounted to R150 000. The NWC value decreased during the year by R50 000. If cash flows are expected to grow at 5% indefinitely, and the appropriate market capitalisation rate for unleveraged cash flow is 12% per year, use the FCFF approach to value the firm. The corporate tax rate applicable to the firm is 35%.

QUESTION TWO (10 marks: 9 minutes)

Use the following table to answer the next questions:

<table>
<thead>
<tr>
<th>Day</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advances</td>
<td>1790</td>
<td>1751</td>
</tr>
<tr>
<td>Declines</td>
<td>1300</td>
<td>1390</td>
</tr>
<tr>
<td>Volume Advancing</td>
<td>903130</td>
<td>908890</td>
</tr>
<tr>
<td>Volume Declining</td>
<td>578600</td>
<td>568800</td>
</tr>
<tr>
<td>Yield on AAA Bonds</td>
<td>9.2%</td>
<td>9.6%</td>
</tr>
<tr>
<td>Yield on BBB Bonds</td>
<td>9.8%</td>
<td>9.8%</td>
</tr>
<tr>
<td>Put Options Outstanding</td>
<td>65</td>
<td>64</td>
</tr>
<tr>
<td>Call Options Outstanding</td>
<td>107</td>
<td>103</td>
</tr>
</tbody>
</table>

2.1. Calculate and interpret the behaviour of the Trin statistic over this period.

2.2. Calculate and interpret the behaviour of the confidence index over this period.

2.3. Name one other indicator that you could interpret given the information in the table above?

DO NOT calculate, simply state the indicators name.
QUESTION THREE (10 marks: 9 minutes)

Don Sampson begins a meeting with his financial advisors by outlining his investment philosophy, as below:

<table>
<thead>
<tr>
<th>Statement number</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Investments should offer strong growth potential but with very limited risk. I prefer to be conservative and to minimize losses, even if I lose out on substantial growth opportunities</td>
</tr>
<tr>
<td>2</td>
<td>All non-governmental investments should be in industry-leading and financially strong companies</td>
</tr>
<tr>
<td>3</td>
<td>Income needs should be met entirely through interest income and cash dividends. Equity securities held should pay cash dividends</td>
</tr>
<tr>
<td>4</td>
<td>Investment decisions should be based primarily on consensus forecasts of general economic conditions and company-specific growth</td>
</tr>
<tr>
<td>5</td>
<td>If an investment falls below the purchase price, that security should be retained until it returns to its original cost. Conversely, I prefer to take quick profits on successful investments</td>
</tr>
<tr>
<td>6</td>
<td>I will direct the purchase of investments, including derivative securities, periodically. These aggressive investments result from personal research and may not prove consistent with my investment policy. I have not kept records on the performance of similar past investments, but I have had some “big winners.”</td>
</tr>
</tbody>
</table>

Select the statement from the preceding table which best illustrates each of the following behavioural finance concepts. Justify your selection thoroughly:

3.1. Mental accounting (3)

3.2. Overconfidence (4)

3.3. Anchoring (3)
QUESTION FOUR (14 marks: 11 minutes)

You have just been elected as a trustee of your company’s retirement fund. A professional fund manager has recommended a portfolios of three assets: Ashanti (stock A), Bokomo (stock B) and T-bills (risk-free asset). You have gathered the following information:

- \( \text{E}[R_A] = 0.20, \text{E}[R_B] = 0.10 \)
- \( \text{SD} \text{ (R}_A\text{)} = 0.30, \text{SD} \text{(R}_B\text{)} = 0.20 \)
- \( \text{CORR} \text{ (R}_A\text{,R}_B\text{)} = 0.2 \)
- \( \text{rf} = 0.03 \)

4.1 Briefly explain what the capital allocation line (CAL) is. (2)

4.2 Calculate the slope of the CAL for both Ashanti and Bokomo shares and indicate which provides better investment opportunities when combined with T-Bills? (3)

4.3 Provide two alternative names for the slope of the CAL. (2)

4.4 Find the portfolio of T-Bills and Ashanti stock that has a target expected return of 14%. (3)

4.5 What is the standard deviation of this portfolio? (3)

4.6 What is the name given to the type of portfolio created in 4.4? (1)
QUESTION FIVE (23 marks: 21 minutes)

Beta Blocker Co. is a pharmaceutical business focused on performance enhancing multivitamins. As these products are a non-essential good for most consumers you believe that the company’s future performance is closely linked to overall market conditions. If the economy is growing strongly you expect the company to yield a return of 28% while if the economy fails to perform you expect that returns will only be 8%. Under normal market conditions you project returns to Beta Blocker Co. of 18%. Based on your analysis of macro-economic fundamentals you are 60% confident that GDP growth in South Africa will stay close to its long-term average of between 1.5-2.5% but you also estimate that there is a 30% chance that GDP growth will exceed 2.5% and that there is also a 10% chance that it will be less than 1.5%. If GDP exceeds 2.5% you would anticipate the JSE-ALSI to yield a return of 24% but only 12% if GDP is below 1.5%. If GDP stays within the long-term average the JSE-ALSI should yield a return of approximately 16%. Treasury Bills are currently yielding 4% and Beta Blocker Co. shares are trading at R32 per share.

5.1 What is your minimum required rate of return to invest in Beta Blockers Co.? (if you cannot calculate beta assume a value of 1.5). (15)

5.2 What was the alpha of investing in Beta Blockers Co. if at the end of the year the firm paid a dividend of R1.60 and its shares were trading at R42 per share? (4)

5.3 Use the Treynor ratio to compare the risk-adjusted performance of Beta Blockers Co. shares over the last year with that of the market if the JSE-ALSI yielded a return of 15% (4)

QUESTION SIX (13 marks: 12 minutes)

The Grabouw Investment Corporation (GRINCO) uses an APT model to estimate expected returns on assets. Grinco uses two indexes to describe security returns. The sensitivity of stock i with respect to a change in each index is given by bi,1 and bi,2. The following information is given for two stocks that are priced consistent with the APT model used by Grinco as well as for the market portfolio and the riskless portfolio.

<table>
<thead>
<tr>
<th>Stock</th>
<th>E[r_i]</th>
<th>b_i,1</th>
<th>b_i,2</th>
<th>σ(e_i)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abacus Co.</td>
<td>9.0%</td>
<td>0.5</td>
<td>1.0</td>
<td>12%</td>
</tr>
<tr>
<td>Beta Co.</td>
<td>9.2%</td>
<td>0.8</td>
<td>0.5</td>
<td>20%</td>
</tr>
<tr>
<td>Market</td>
<td>8.0%</td>
<td></td>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Riskless Portfolio</td>
<td>5.0%</td>
<td></td>
<td></td>
<td>0%</td>
</tr>
</tbody>
</table>

6.1 Suppose that an analyst at Grinco finds a stock D that has the following characteristics: E[r_D] = 7.0% b_D,1 = 0.35 b_D,2 = 1.25. Calculate the alpha for share D and based on your answer comment on share D’s value and describe the steps you would take to exploit any arbitrage opportunities. (6)

6.2 Calculate the M^2 value for Beta Co. (7)
SECTION C – ESSAY

Start this section in a new booklet

QUESTION SEVEN (50 marks: 45 minutes)

The diagram above graphically illustrates the dominance of the Capital Asset Pricing Model (CAPM) in estimating the cost of equity by practitioners. The CAPM, however, has been the subject of ongoing academic criticism.

a) Critically discuss the assumptions underlying the CAPM.

b) Review the empirical evidence of the CAPM’s performance and based on your discussion comment on its continuing popularity.
QUESTION SEVEN (50 marks: 45 minutes)

The diagram above graphically illustrates the increasing popularity of passive investments.

a) Explain the efficient market hypothesis and discuss its relevance to the active versus passive debate. (15)

b) Discuss the pros and cons of passive investing. (15)

c) Explain the difference between investing in a passive index fund and an exchange traded fund, discussing the advantages and disadvantages of each investment vehicle. (20)
### Formula Sheet

#### Weighted Average Cost of Capital (WACC)

\[
WACC = \left( \frac{E}{V} \times k_E \right) + \left( \frac{P}{V} \times k_P \right) + \left( \frac{D}{V} \times k_D \times (1 - t) \right)
\]

#### Value of Firm

\[
V = \sum_{t=1}^{T} \frac{FCFF_t}{(1 + WACC)^t} + \frac{P_T}{(1 + WACC)^T}
\]

#### Equity Value

\[
Value_{\text{Equity}} = \sum_{t=1}^{T} \frac{FCFE_t}{(1 + k_e)^t} + \frac{P_T}{(1 + k_e)^T}
\]

#### Optimal Weight \( A \)

\[
\text{Optimal Weight}_A = \frac{\text{Factor}_A}{(1 + \text{Factor}_A)}
\]

#### Beta

\[
\beta = \rho(\text{Share, Market}) \times \frac{\sigma_{\text{Share}}}{\sigma_{\text{Market}}}
\]

#### Total Risk

\[
\text{Total Risk}^2 = \text{Systematic Risk}^2 + \text{Unique Risk}^2
\]

#### Variance (VAR)

\[
\text{VAR}(\text{Share}) = (\text{Beta}_{\text{Share}} \times \text{Standard Deviation}_{\text{Market}})^2 + UR^2
\]