

INV2601 SELF ASSESSMENT QUESTIONS

1. The annual holding period return of an investment that was held for four years is 5.74%. The ending value of this investment was R1 000. Calculate the beginning value of the investment.
 1. R799.94
 2. R945.72
 3. R1 057.40
 4. R1 250.00

2. Which of the following is **not** a purpose of market indices?
 1. To predict past market movements.
 2. To create and monitor an index fund.
 3. To measure market rates of return in economic studies.
 4. As benchmarks to evaluate the performance of professional portfolio managers.

3. If a risk-free asset has a correlation of zero with all other risky assets the expected return will be to/than the actual return.
 1. lower
 2. equal
 3. greater
 4. not related

4.(i).... risk is the only risk that a share contributes to a well diversified portfolio while(ii).... risk is diversified away from this portfolio.

<u>(i)</u>	<u>(ii)</u>
1. Financial	unsystematic
2. Systematic	financial
3. Systematic	unsystematic
4. Unsystematic	systematic

Use the information in the table below to answer question 5.

	Average rate of return	Standard deviation	Correlation coefficient with market index
Green Limited	26%	14%	0.45
Market Index	10%	6%	

5. Calculate the beta of Green Limited.

1. 0.01
2. 0.06
3. 0.55
4. 1.06

6. Brainchild Limited has a current dividend of R2.00 per share. It has a beta of 1.1 and a constant growth rate of 5%. The risk-free rate is 8% and the return of the market is 12%. Calculate the intrinsic value of Brainchild Limited using the constant growth model.

1. R27.03
2. R28.38
3. R28.57
4. R30.00

7. Maroon Limited has just paid dividends of R1.00 per share this year. The dividend is expected to grow at 15% over the next two years and at 8% in year three. There after growth is expected to level off to a constant growth of 4%. Maroon Limited has a required rate of return of 18%. Calculate the intrinsic value of Maroon Limited using the three stage dividend discount model.

1. R6.46
2. R9.25
3. R9.37
4. R10.61

Use the information in the table below to answer question 8.

Fashion Corporation	
Dividend payout ratio	30%
Net profit margin	15%
Total asset turnover	2.0
Financial leverage	0.9

8. Calculate the growth rate of Fashion Corporation.

1. 8.10%
2. 15.00%
3. 18.90%
4. 27.00%

9. A(i)..... shares are shares with low betas, regardless of the nature of the company while(ii)..... companies are firms whose business involves great risk.

- | <u>(i)</u> | <u>(ii)</u> |
|--------------|-------------|
| 1. cyclical | defensive |
| 2. cyclical | speculative |
| 3. defensive | cyclical |
| 4. defensive | speculative |

10. Based on technical analysis, a share should be bought if:

1. the moving average line decreases and crosses the share price line.
2. the moving average line increases and crosses the share price line.
3. the overbought-oversold (OB-OS) line starts to increase from its maximum negative value.
4. alternative 2 and 3 above.

11. Consider a bond selling at par with effective duration of 10.6 years and convexity of 210. A 2% decrease in yield would cause the price to change by 21.2%, according to the duration rule. What would be the percentage price change according to the total effect?

1. 10.60%
2. 17.00%
3. 21.20%
4. 29.60%

Use the following information to answer questions 12 and 13.

A bond that pays 8% coupon payment rate annually on its R1000 face value, matures in 4 years and is selling for R967.59.

12. Calculate the expected yield to maturity of the bond.

1. 3.00%
2. 7.00%
3. 8.00%
4. 9.00%

13. Calculate the current yield of the bond.

1. 8.06%
2. 8.27%
3. 9.00%
4. 9.50%

14. Calculate the effective duration of an 18%, R1000 par bond maturing in 15 years if the yield to maturity is 7% and interest is paid semi-annually. The yield to maturity changes by 1%

1. 5.23
2. 6.54
3. 7.74
4. 9.23

15. An instrument issued by a company that gives an investor the right but not an obligation to buy shares in that company is a

1. warrant.
2. call option.
3. put option.
4. futures.

16. If two parties enter into an agreement to exchange 10% per annum interest (compounded annually) and a 3-month JIBAR on a notional amount of R35 million. What is the name of this agreement?

1. Interest futures
2. Interest rate swap
3. Interest rate contract
4. Interest rate forward

17. A call option on a share is currently selling for R35. The call option is in the money by R3. What is the strike price of the call?

1. R32
2. R35
3. R38
4. R42

18. Assume that at the end of four months, the price of a share currently trading at R80 will either move up or down by R5. Calculate the delta of an at-the-money European call option with a strike price of R73.

- 1. 0.25
- 2. 0.50
- 3. 1.00
- 4. 1.20

19. If there is a one-year spot rate of 6% and a two-year spot rate of 8%, the forward rate from year 1 to 2 is?

- 1. 8.12%
- 2. 9.06%
- 3. 9.72%
- 4. 10.04%

Use the information below to answer questions 20 to 22.

Probability of occurrence	Security A	Security B
50%	12%	10%
25%	10%	11%
25%	8%	9%

20. Calculate the standard deviation of Security A.

- 1. 0.71%
- 2. 0.97%
- 3. 1.23%
- 4. 1.66%

21. Calculate the correlation between security A and B; if the standard deviation of B is 1.23 and the covariance between the two is 1.30.

1. 0.21
2. 0.64
3. 0.87
4. 0.81

22. Calculate the portfolio risk if the measurement is 50% in A and 50% in B.

1. 0.85%
2. 1.31%
3. 1.66%
4. 2.72%

Use the information below to answer questions 23 to 25.

Portfolio	Average Return	Standard Deviation	Beta
A	8%	3	0.4
B	11%	8	1.0
C	14%	6	1.1
R	3%	0	0
Market index	9%	9	1.0

The risk-free rate of return is 3%.

23. Calculate the Sharpe measure of Portfolio A.

1. 0.50
2. 1.00
3. 1.67
4. 1.83

24. Calculate the Jensen measure of Portfolio B.

1. 2.00
2. 2.60
3. 3.00
4. 4.40

25. Calculate the Treynor measure of Portfolio C.

1. 8.00
2. 10.00
3. 12.50
4. 14.00

26. Which one of the following statements is **false** with regards to bond fundamentals?

1. Zero-coupon bonds pay a minimum interest.
2. Callable bond means that the issuer may buy the bond back from the investor before maturity.
3. Credit ratings do not directly address any risk other than credit risk.
4. The coupon rate of floating rate notes is normally set at a certain percentage below or above the reference rate.

27. Assume that you purchase a 2 year R1 000 par value bond; with a 14% coupon and a yield to maturity of 10% (interest is paid annually). The market price of the bond is R1 069.42. After you purchase the bond, one year interest rates are as follows (these are the reinvestment rates):

Year 1	12%
Year 2	10%

Calculate the realised compound or horizon yield, if you hold the bond to maturity. Interest is paid annually.

1. 6.22%
2. 9.38%
3. 10.00%
4. 12.50%

28. Which of the following is **false** with regard to theories on the term structure and the shape of the yield curve?

1. The expectations theory proposes the forward rates are solely a function of current spot rates.
2. The liquidity preference proposes that forward rates reflect investor' expectations of future rates plus a liquidity premium to compensate them for exposure to interest rate risk.
3. The segmented market theory proposes that lenders and borrowers are confined to certain maturity segments due to restrictions on their maturity structure and will therefore not be enticed to shift out of these maturity ranges.
4. The expectations theory proposes that forward rates are solely a function of expected future spot rates.

Use the information below to answer questions 29 to 32.

A 20 year, 10% semi-annual coupon bond (R1 000 par value) is priced at a yield to maturity of 8%. The yield to maturity changes by 1%.

29. Calculate the duration and convexity of the bond.

<u>Effective duration</u>	<u>Effective convexity</u>
1. 9.53	68.78
2. 9.53	137.55
3. 19.06	68.78
4. 19.06	137.55

30. Calculate the duration effect when the yield to maturity decreases [$\% \Delta P_{D(-1)}$] and increases [$\% \Delta P_{D(+1)}$] by 1% respectively. (Base your calculation on your final answer on duration in question 29).

<u>$\% \Delta P_{D(-1)}$</u>	<u>$\% \Delta P_{D(+1)}$</u>
1. -9.53%	9.53%
2. 9.53%	-9.53%
3. -19.06%	19.06%
4. 19.06%	-19.06%

31. Calculate the convexity effect when the yield to maturity changes by 1%. (Base your calculation on your final answer on convexity in question 29).

1. 0.69%
2. 1.38%
3. 5.07%
4. 10.14%

32. Calculate the total effects on price [$\% \Delta P_{T(-1)}$ and $\% \Delta P_{T(+1)}$] when the yield to maturity changes by 1%. (Base your answer on your final answer on duration and convexity in question 29).

	<u>$\% \Delta P_{T(-1)}$</u>	<u>$\% \Delta P_{T(+1)}$</u>
1.	-10.22%	8.84%
2.	10.22%-	-8.84%
3.	-20.44%	18.99%
4.	20.44%	-18.99%

33. Tendai Makoni bought shares of Platinum Mine Ltd; it has a market price of R94 and a strike price of R100. He also bought a call option for a premium of R2. Calculate the loss to a put writer and the maximum profit to put holder.

	<u>Loss to put writer</u>	<u>Maximum profit to put holder</u>
1.	-R4	R98
2.	-R4	R100
3.	R4	R98
4.	R4	R100

34. Which of the following correctly describes the position of a call writer?

1. The call holder has the obligation to sell the optioned securities to the writer of the put option.
2. The call writer will only exercise the option if the share price is greater than the exercise price.
3. The call writer has a profit potential that is unlimited but restricted to the breakeven amount.
4. The call holder has the right to require the writer to sell the optioned securities at a preset price.

35. Which of the following involves the buying, holding and selling of assets to profit from fluctuations in price over the short term as opposed to buying for long term gains?

1. Gearing
2. Hedging
3. Open interest
4. Speculation

36. Eric Vavi bought shares of Invest Wise Limited; it has a market price of R95 and a strike price of R100. He also bought a call for a premium of R5. Calculate the breakeven and profit for the call holder, if the market price increases to R120.

<u>Breakeven amount</u>	<u>Profit for the call holder</u>
1. R95	R15
2. R95	R25
3. R105	R15
4. R105	R25

37. Calculate the lower and upper bound price of a 3-month European put option on a non-dividend paying share when the share is currently trading at R50, the strike price of R55 and the risk-free rate of interest is 8% per annum.

<u>Lower bound</u>	<u>Upper bound</u>
1. -R3.95	R50.00
2. -R3.95	R53.95
3. R3.95	R50.00
4. R3.95	R53.95

38. Which of the following definition is correct with regards to options?

1. An at-the-money option is when the strike price is equal to the spot price.
2. The European type of option can only be exercised on its maturity date.
3. The option premium is the price paid to the seller by the buyer in order to purchase the option.
4. All of the above.

39. For an option free bond (i.e a bond with no embedded option eg. a call or put), what are the convexity adjustments on the value of the approximate bond price change with regards to a decrease in the yield to maturity (ytm) and an increase in the yield to maturity respectively?

- | <u>Decrease in ytm</u> | <u>Increase in ytm</u> |
|------------------------|------------------------|
| 1. Increase in value | Decrease in value |
| 2. Increase in value | Increase in value |
| 3. Decrease in value | Increase in value |
| 4. Decrease in value | Decrease in value |

Use the information in the table below to answer question 40.

Shares A, P and Y each have the same expected return and standard deviation. The following table shows the correlation between the returns on these shares.

Correlation of Share Returns			
	Share A	Share P	Share Y
Share A	+1.0		
Share P	+0.7	+1.0	
Share Y	-0.9	-0.2	+1.0

40. Given these correlations, the portfolio from these shares having the **lowest** risk is a portfolio:

1. Equally invested in shares A and P
2. Equally invested in shares P and Y
3. Equally invested in shares A and Y
4. Equally invested in shares A, P and Y

41. A 5 year R100 par value bond paying semi-annual coupons has a coupon rate of 20% and a yield to maturity 11.94%. Calculate the yield to call, if the bond is callable at R105, at the beginning of year three.

1. 3.17%
2. 5.97%
3. 6.34%
4. 11.94%

42. Calculate the yield to put of a 5 year R100 par value bond that sells at a discount at R82.25 and is puttable at R93.25 after 3 years. The bond has coupon payments quarterly of R3 and a yield to maturity of 17.4%.

1. 4.35%
2. 4.51%
3. 17.40%
4. 18.05%

Use the information below to answer questions 43 to 46.

A 6 years annual bond with a par value of R100 has an 8.5% yield to maturity and a coupon rate of 6%. If there is a 100 basis points change in the interest rate.

43. Calculate the effective duration.

1. 3.65
2. 4.76
3. 8.48
4. 9.47

44. Calculate the effective convexity.

1. 12.50
2. 14.57
3. 20.00
4. 25.00

45. Calculate the total effects on price [$\% \Delta P_{T(-1)}$ and $\% \Delta P_{T(+1)}$] when the yield to maturity changes by 1%. (Base your answer on your final answer on effective duration and convexity in questions 43 and 44 respectively).

	$\% \Delta P_{T(-1)}$	$\% \Delta P_{T(+1)}$
1.	-4.61%	4.91%
2.	-4.91%	4.61%
3.	4.61%	-4.91%
4.	4.91%	-4.61%

46. Calculate the change in estimated change in price [$P_{T(-1)}$ and $P_{T(+1)}$] due to duration and convexity?

	$P_{T(-1)}$	$P_{T(+1)}$
1.	R80.34	R97.01
2.	R84.52	R92.95
3.	R92.97	R84.53
4.	R97.01	R80.34

Use the information below to answer questions 47 to 48.

Assume that you purchase a 4 year R1 000 par value bond, with a 9% coupon, and a yield to maturity of 10% (interest is paid annually). After you purchase the bond, one year interest rates are as follows (these are the reinvestment rates):

Year 1	11%
Year 2	8%
Year 3	6%
Year 4	7%

47. Calculate the present value of the bond.

1. R968.30
2. R996.54
3. R1000.00
4. R1024.85

48. Calculate the realised compound or horizon yield, if you hold the bond to maturity.

1. 8.09%
2. 8.74%
3. 9.05%
4. 9.63%

Use the information in the table to answer the questions 49 to 50.

All bonds have a face value of R100 and semi-annual coupon payments.

BONDS	MATURITY	ANNUAL COUPON	PRICE	YTM
A	6 months	7%	R100	7%
B	12 months	11%	R104.29	6.5%
C	18 months	13%	R112.41	4.36%

49. Calculate the equivalent **12-month spot rate** using the bootstrapping method.

1. 3.25%
2. 3.24%
3. 6.48%
4. 6.50%

50. Calculate the equivalent **18-month spot rate** using the bootstrapping method.

1. 2.11%
2. 2.18%
3. 4.22%
4. 4.36%

51. Which of the following statements is correct with regards to hedging?

1. It is any trading strategy requiring no cash where there is some probability of making a profit without incurring the risk of a loss.
2. It is risky strategy of selling a security not owned in order to capitalise on an expected decline in price and could lead to substantial losses should the opposite occur.
3. It revalues a futures contract on a daily basis and adjusts the open position to reflect profits and losses resulting from the price movements that occurred during the last trading session.
4. It is the practise of offsetting the price risk inherent in any spot market position by taking an equal but opposite position in the futures market.

52. Put buying has which of the following advantages over short selling?

1. The short seller is not affected by cash dividend payments.
2. The put buyer gets financial leverage.
3. The put buyer is exposed to only limited liability.
4. Both (2) and (3) are advantages.

53. Thabo Khumalo purchased a call option with a strike price of R50 for R5. At the same time, he purchased a put option on the same share with an exercise price of R50 for R6. If the share is currently selling for R70 per share, calculate the profit or loss from this option strategy.

1. R0
2. R9
3. R14
4. R15

54. A 6-month European call option with a strike price of R40 sells at a premium of R5.00. It has a risk free rate of 8% and a current share price of R42. Using the put call parity, what is the equivalent value of the European put option.

1. R0.00
2. R1.49
3. R5.42
4. R8.51

55. Calculate the required rate of return of a portfolio with a 71.1% investment in share A with a 7% required rate of return and 28.9% investment in share B with a 20% required rate of return.

1. 7.00%
2. 8.50%
3. 10.76%
4. 13.50%

56. A portfolio is made up of share A and share B. Share A has a standard deviation of 24% and has a weight of 40% in the portfolio. Share B on the other hand has a standard deviation of 11% and a weight of 60% in the portfolio. The correlation coefficient of share A and share B is 0.7. Calculate the standard deviation of the portfolio.

1. 4.08%
2. 4.13%
3. 14.97%
4. 16.21%

57. The share of Valet Corporation is available at R200. The theoretical futures price is R240 per share. If the futures contract available at that point in time was R225, indicate the appropriate strategy that would earn an arbitrage profit.

1. Long futures, short spot and invest proceeds
2. Long futures, long spot and borrow proceeds
3. Short futures, long spot and borrow money
4. Short futures, long spot and invest proceeds

58. Mr and Mrs Mahlangu are both 47 years old. They have repaid their debts and have an income that exceeds their expenses. Their children have left home and they are now emphasizing active retirement planning by accumulation of an investment (retirement) portfolio. Their portfolio is focused on medium risk with portfolios weighting heavier in fixed income generating instruments. In which phase of the individual life cycle would Mr and Mrs Mahlangu be classified.

1. Accumulation phase
2. Capital preservation phase
3. Consolidation phase
4. Spending phase

59. Delta is a sensitivity measure that measures.....

1. an option's sensitivity to changes in the exercise price of the underlying.
2. an option's sensitivity to changes in the volatility of the underlying.
3. an option's sensitivity to gamma's sensitivity to changes in the underlying.
4. an option's sensitivity to changes in the spot price of the underlying.

60. Which option trading strategy is a combination of a long call and a long put that have the same underlying and the same expiration however with different strikes prices; it also requires a large move in the underlying spot price in order to profit?

1. Strangle
2. Straddle
3. Protective put
4. Bull call spread