21 FREE CASH FLOW VALUATION

1. The value of beta for Country Point is:
   (A) 1.27.
   (B) 1.00.
   (C) 1.09.

2. In what ways are dividends different from free cashflow to equity (FCFE)?
   (A) Dividends are often viewed as "sticky." Managers are reluctant to radically change the dividend payout policy while FCFE often has immense variability.
   (B) Companies often use FCFE as a signal of positive future growth prospects while dividends are not used for signaling.
   (C) There is no difference. Dividends must equal FCFE.

3. An increase in financial leverage will cause free cash flow to equity (FCFE) to:
   (A) increase in the year the borrowing occurred.
   (B) decrease or increase, depending on its circumstances.
   (C) decrease in the year the borrowing occurred.

4. The difference between free cash flow to equity (FCFE) and free cash flow to the firm (FCFF) is:
   (A) before-tax interest and net borrowing.
   (B) earnings before interest and taxes (EBIT) less taxes.
   (C) after-tax interest and net borrowing.

5. Which of the following statements is least accurate? A firm's free cash flows to equity (FCFE) is the cash available to stockholders after funding:
   (A) debt principal repayments.
   (B) dividend payments.
   (C) capital expenditure requirements.

6. In using FCFE models, the assumption of growth should be:
   (A) independent from the assumptions of other variables.
   (B) only consistent with the assumptions of capital spending and depreciation.
   (C) consistent with assumptions of other variables.

7. Dividends paid out to the shareholders:
   (A) are always equal to free cash flow to equity (FCFE).
   (B) may be higher than free cash flow to equity FCFE.
   (C) are always less than free cash flow to equity (FCFE).

8. If a firm is valued using FCFF, the relevant discount rate is the:
   (A) before-tax weighted average cost of capital.
   (B) before-tax cost of equity.
   (C) after-tax weighted average cost of capital.

9. Assuming that the investment in fixed capital and working capital offset each other, free cash flow to the firm (FCFF) may be proxied by net income if:
   (A) earnings before interest and taxes (EBIT) equals depreciation.
   (B) non-cash charges and interest charges are equal.
   (C) non-cash charges and interest charges are zero.

10. Which of the following items is NOT subtracted from the net income to calculate free cash flow to equity (FCFE)?
   (A) increase in accounts receivable.
   (B) Interest payments to bondholders.
   (C) Increase in fixed assets.

11. Free cash flow to the firm is equal to cash flow from operations minus fixed capital investment:
   (A) minus after-tax interest expense.
   (B) plus after-tax interest expense.
   (C) minus pre-tax interest expense.

Michael Patrick, CFA, is a new analyst at EKS Inc., an investment management company based in New York. Patrick is attempting to value Johan Corp., a U.S. based company using free cash flows. Exhibits 1 through 2 present extracts from the financial statements, which are prepared according to U.S. GAAP.

Exhibit 1

Johan Corp. Summary Balance Sheets on 31 December (U.S. $ millions)		
	2x12 Forecast	2x11 Actual
Cash	50	40
Accounts receivable	220	200

Inventory	265	245
Current assets	**535**	**485**
Gross PP&E	2,000	1,600
Accumulated depreciation	(950)	(890)
Total assets	**1,585**	**1,195**
Accounts payable	50	50
Short-term debt	70	50
Current liabilities	**120**	**100**
Long-term debt	620	400
Common stock	335	335
Retained earnings	510	360
Total liabilities and equity	**1,585**	**1,195**

Exhibit 2

Johan Corp. Summary Income Statement (U.S. $ millions)		
	2x12 Forecast	**2x11 Actual**
EBIT	415	380
EBITDA	475	430
Interest expense	200	180
Tax rate 30%		

There will be no sales of long-term assets in 2x12.

Patrick who is unfamiliar with the free cash flow technique has been reviewing EKS's handbook for some guidance. The statements below are extracts from the handbook:

Statement Share repurchases will reduce FCFE and will leave FCFF unchanged.

1: Statement Changes in leverage have a minor effect on FCFE and no effect on FCFF. For example, decreasing leverage through repayment of debt will decrease FCFE in the current year and increase forecasted FCFE in future years.

2: Statement The loss on a sale of a long-term asset that has been included in operating expenses is a non-cash charge that should be adjusted for when calculating FCFF from EBIT.

3: Statement The loss on a sale of a long-term asset that had been included in operating expenses is a non-cash charge that should b adjusted for when calculating FCFF from EBIT.

4: Statement The formula to calculate FCFF based on EBITDA is: FCFF = EBITDA(1 – tax rate) – FC_{Inv} – WC_{Inv}

Patrick is also looking to value a potential takeover target, Fite Inc. Patrick has gathered the following data on Fite Inc. All figures are in millions of dollars.

	2x11	2x10	2x09	2x08
Net income	– $12	$110	$50	$95
FCFE	– $5	–$35	$45	–$20
FCFF	$9	$11	$12	$14
Dividends	$10	$10	$9	$9
Debt-to-equity	97%	94%	81%	85%

Patrick decides to use the most recent 2x11 FCFF of $9 to estimate the value of the firm. He decides to use a three-stage model and makes the following assumptions:

High growth phase: FCFF will grow at 30% for the next three years. WACC = 18%

Transitional phase: For the following 3 years, growth will decline by 8% per year down to a stable growth rate of 6%. WACC = 15%

Stable-growth period: Growth will remain at 6% forever. WACC = 10%

12. Calculate the forecasted free cash flow to the firm (FCFF) for 2x12, using the data in Exhibits 1 and 2.

(A) –89.5.

(B) –107.5.

(C) –131.5.

13. Calculate the forecasted free cash flow to equity (FCFE) for 2x12.

(A) 10.5.

(B) –9.5.

(C) –49.5.

14. Regarding the handbook's statements on free cash flow techniques:

	Statement 1	Statement 2
(A)	Correct	Correct
(B)	Incorrect	Correct
(C)	Correct	Incorrect

15. Regarding the handbook's statements on free cash flow techniques:

	Statement 1	Statement 3
(A)	Correct	Correct
(B)	Incorrect	Correct

(C) Correct Incorrect

16. The ownership perspective implicit in the dividend valuation approach is of:
    (A) a preferred stockholder.
    (B) control.
    (C) a common stockholder.

17. Which of the following is most useful in analyzing firms that have high leverage and high growth?
    (A) Two-stage free cash flow to the firm (FCFF) model.
    (B) Two-stage free cash flow to equity (FCFE) model.
    (C) Stable-growth free cash flow to the firm (FCFF) model.

Beachwood Builders merged with Country Point Homes in December 31, 1992. Both companies were builders of mid-scale and luxury homes in their respective markets. In 2004, because of tax considerations and the need to segment the businesses between mid-scale and luxury homes, Beachwood decided to spin-off Country Point, its luxury home subsidiary, to its common shareholders. Beachwood retained Bernheim Securities to value the spin-off of Country Point as of December 31, 2004.

When the books closed on 2004, Beachwood had $140 million in debt outstanding due in 2012 at a coupon rate of 8%, a spread of 2% above the current risk free rate. Beachwood also had 5 million common shares outstanding. It pays no dividends, has no preferred shareholders, and faces a tax rate of 30%. When valuing common stock, Bernheim's valuation models utilize a market risk premium of 11%.

The common equity allocated to Country Point for the spin-off was $55.6 million as of December 31, 2004. There was no long-term debt allocated from Beachwood.

The Managing Director in charge of Bernheim's construction group, Denzel Johnson, is prepping for the valuation presentation for Beachwood's board with Cara Nguyen, one of the firm's associates. Nguyen tells Johnson that Bernheim estimated Country Point's net income at $10 million in 2004, growing $5 million per year through 2008. Based on Nguyen's calculations, Country Point will be worth $223.7 million at the end of 2008. Nguyen decided to use a cost of equity for Country Point in the valuation equal to its return on equity at the end of 2004 (rounded to the nearest percentage point).

Nguyen also gives Johnson the table she obtained from Beachwood projecting depreciation (the only non-cash charge) and capital expenditures:

$(in millions)	2004	2005	2006	2007	2008
Depreciation	5	6	5	6	5
Capital Expenditures	7	8	9	10	12

Looking at the numbers, Johnson tells Nguyen, "Country Point's free cash flow (FCF) will be $25 million in 2006." Nguyen adds, "That's FCF to the Firm (FCFF). FCF to Equity (FCFE) will be lower."

18. Regarding the statements by Johnson and Nguyen about FCF in 2006:
    (A) only Nguyen is incorrect.
    (B) only Johnson is incorrect.
    (C) both are incorrect.

19. If FCInv equals Fixed Capital Investment and WCInv equals Working Capital Investment, which statement about FCF and its components is least accurate?
    (A) FCFE = (EBIT x (1 – tax rate)) + Depreciation – FCInv – WCInv.
    (B) FCFF = (EBITDA x (1 – tax rate)) + (Depreciation x tax rate) – FCInv - WCInv.
    (C) WCInv is the change in the working capital accounts, excluding cash and short-term borrowings.

20. Given Nguyen's estimate of Country Point's terminal value in 2008, what is the growth assumption she must have used for free cash flow after 2008?
    (A) 3%.
    (B) 7%.
    (C) 9%.

21. The most appropriate model for valuing Fite Inc. is the:
    (A) free cash flow to equity model.
    (B) free cash flow to the firm model.
    (C) dividend discount H-model.

22. Assuming Patrick is correct to use free cash flow to the firm to value Fite Inc.; the value of the firm is closest to:
    (A) 379.
    (B) 412.
    (C) 22.

23. Which of the following types of companies is the two-stage free cash flow to equity (FCFE) model best suited for? Companies:
    (A) with patents or firms in an industry with significant barriers to entry.
    (B) growing at a rate similar to or less than the nominal growth rate of the economy.
    (C) in high growth industries that will face increasing competitive pressures over time, leading to a gradual decline in growth to a stable level.

Ashley Winters, CFA, has been hired to value Goliath Communications, a company that is currently experiencing rapid growth and expansion. Winters is an expert in the

communications industry and has had extensive experience in valuing similar firms. She is convinced that a value for the equity of Goliath can be reliably obtained through the use of a three-stage free cash flow to equity (FCFE) model with declining growth in the second stage. Based on up-to-date financial statements, she has determined that the current FCFE per share is $0.90. Winters has prepared a forecast of expected growth rates in FCFE as follows:

Stage 1:	10.5% for years 1 through 3
Stage 2:	8.5% in year 4, 6.5% in year 5, 5.0% in year 6
Stage 3:	3.0% in year 7 and thereafter

Moreover, she has determined that the company has a beta of 1.8. The current risk-free rate is 3.0%, and the equity risk premium is 5.0%. Other financial information:

Outstanding shares	10 million
Tax rate	40.0%
Interest expense	$750,000
Net borrowing	–$100,000
Cost of debt	7.5%
Debt-to-equity ratio	25.0%
Estimated growth rate for the firm	4.0%

24. The terminal value in year 6 is closest to:
    (A) $16.86.
    (B) $21.68.
    (C) $25.29.

25. The per-share value Winters should assign to Goliath's equity is closest to:
    (A) $20.24.
    (B) $13.55.
    (C) $16.87.

26. The weighted average cost of capital (WACC) is closest to:
    (A) 10.5%.
    (B) 10.9%.
    (C) 11.1%.

27. The value of the firm, based on the constant growth model, is closest to:
    (A) $153 million.
    (B) $140 million.
    (C) $124 million.

28. What is the most likely reason that you get an extremely low value from the three-stage FCFE model? Capital expenditures are significantly:
    (A) less than depreciation during the high-growth phase.
    (B) higher than depreciation in the stable-growth phase.
    (C) higher than depreciation during the high-growth phase.

29. A firm in stable growth phase should have:
    (A) a required rate of return close to the market rate of return and capital expenditures that are not too large relative to depreciation expense.
    (B) a growth rate higher than that of the economy and a required rate of return that is greater than the market rate of return.
    (C) capital expenditures that are less than the depreciation expense.

30. In the two-stage FCFE model, the required rate of return for calculating terminal value should be:
    (A) equal to the average required rate of return for the industry.
    (B) lower than the required rate of return used for the high-growth phase.
    (C) higher than the required rate of return used for the high-growth phase.

31. Which of the following statements regarding dividends and free cash flow to equity (FCFE) is least accurate?
    (A) FCFE discount models usually result in higher equity values than do dividend discount models (DDMs).
    (B) FCFE can be negative but dividends cannot.
    (C) Required returns are higher in FCFE discount models than they are in dividend discount models, since FCFE is more difficult to estimate.

32. SOX, Inc., expects high growth in the next 4 years before slowing to a stable future growth of 3%. The firm is assumed to pay no dividends in the near future and has the following forecasted free cash flow to equity (FCFE) information on a per share basis in the high-growth period:

	Year 1	Year 2	Year 3	Year 4
FCFE	$3.05	$4.10	$5.24	$6.71

High-growth period assumptions:

- SOX, Inc.'s, target debt ratio is 40% and a beta of 1.3.
- The long-term Treasury Bond Rate is 4.0%, and the expected equity risk premium is 6%.

Stable-growth period assumptions:

- SOX, Inc.'s, target debt ratio is 40% and a beta of 1.0.
- The long-term Treasury Bond Rate is 4.0% and the expected equity risk premium is 6%.
- Capital expenditures are assumed to equal depreciation.
- In year 5, earnings are $8.10 per share while the change in working capital is $2.00 per share.
- Earnings and working capital are expected to grow by 3% a year in the future.

What is the present value on a per share basis for SOX, Inc.?

(A) $70.49.

(B) $64.24.

(C) $77.15.

33. BOX, Inc., earned $4.55 per share last year. The firm had capital expenditures of $1.75 per share and depreciation expense of $1.05. BOX, Inc., has a target debt ratio of 0.25.

	High-Growth Period	Transitional Period	Stable-Growth Period
Duration	2 Years	5 Years	
Earnings growth rate	45%	Will decline 8% per year to5% in the stable-growth period	5%
Growth in capital expenditures	30%	Increases by 8% per year	Same $ amount as Depreciation
Growth in depreciation	30%	Increases by 13% per year	Same $ amount as Capital Expenditure
Change in working capital	Given Below	Given Below	$2.25 per share in Year 8
Shareholder required return	25%	15%	10%

	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Earnings per share (EPS)	4.55	6.60	9.57	13.11	16.91	20.46	23.12	24.27
Capital expenditures	1.75	2.28	2.96	3.19	3.45	3.73	4.02	4.35
Depreciation	1.05	1.37	1.77	2.01	2.27	2.56	2.89	3.27

Change in working capital (WC)	0.90	1.10	1.40	1.60	1.80	2.00	2.20	2.10
Free cash flow to equity (FCFE)			7.63	11.01	14.67	18.08	20.62	21.89

What is the present value of BOX, Inc.?

(A) $223.65.

(B) $212.91.

(C) $195.71.

34. A control perspective is most consistent with which of the following valuation approaches?

(A) Dividends.

(B) Free cash flow (FCF).

(C) Price to enterprise value.

35. Using the information below, value the stock of Symphony Publishing, Inc. using the free cash flow from equity (FCFE) valuation method.

- Required return of 13.0%.
- Value at the end of year 3 of 13 times $FCFE_3$.
- Shares outstanding: 10.0 million.
- Net income in year 1 of $10.0 million, projected to grow at 10% for the next two years.
- Depreciation per year of $3.0 million.
- Capital Expenditures per year of $2.5 million.
- Increase in working capital per year of $1.0 million.
- Principal repayments on debt per year of $1.5 million.

The value per share of Symphony Publishing is approximately:

(A) $112.10.

(B) $14.10.

(C) $11.21.

36. A common approach to forecasting free cash flows is to:

(A) calculate historical free cash flow and apply an expected growth rate.

(B) project earnings before interest and taxes (EBIT) and expected capital expenditures.

(C) project net income and expected capital expenditures.

37. A firm has:

- Free cash flow to equity = $4.0 million.
- Cost of equity = 12%.
- Long-term expected growth rate = 5%.
- Value of equity per share = $57.14 per share.

What will happen to the value of the firm if free cash flow to equity decreases to $3.2 million?

(A) The value will decrease.

(B) The value will increase.
(C) There is insufficient information to tell.

38. Which of the following free cash flow to equity (FCFE) models is most suited to analyze firms in an industry with significant barriers to entry?
(A) FCFE Perpetuity Model.
(B) Two-stage FCFE Model.
(C) Stable Growth FCFE Model.

39. Which of the following statements about the three-stage FCFE model is most accurate?
(A) There is a transition period where the growth rate is stable.
(B) There is a transition period where the growth rate declines.
(C) There is a final phase when growth rate starts to decline.

40. Sudbury Industries expects FCFF in the coming year of 400 million Canadian dollars ($), and expects FCFF to grow forever at a rate of 3 percent. The company maintains an all-equity capital structure, and Sudbury's required rate of return on equity is 8 percent.
Sudbury Industries has 100 million outstanding common shares. Sudbury's common shares are currently trading in the market for $80 per share.
Using the Constant-Growth FCFF Valuation Model, Sudbury's stock is:
(A) fairly valued.
(B) undervalued.
(C) overvalued.

41. Using the stable growth free cash flow to the firm (FCFF) model, what is the value of Quality Builders under the assumptions contained in the table below?

Quality Builder Free Cash Flow to the FirmYear 0	
EBIT	$500
Depreciation	$200
Capital Spending	$300
Working Capital Additions	$30
Tax Rate	40%
Assumed Constant Growth Rate in Free Cash Flow	5%
Weighted-average Cost of Capital	11%

(A) $2,833.33.
(B) $6,475.00.
(C) $2,975.00.

42. The repayment of a significant amount of outstanding debt will cause free cash flow to equity (FCFE) to:
(A) remain the same.
(B) increase.
(C) decrease

43. Industrial Light currently has:

- Expected free cash flow to the firm in one year = $4.0 million.
- Cost of equity = 12%.
- Weighted average cost of capital = 10%.
- Total debt = $30.0 million.
- Long-term expected growth rate = 5%.

What is the value of equity?

(A) $50,000,000.

(B) $44,440,000.

(C) $80,000,000.

Jon Binkster, CFA, is researching a U.S. based company Busicomb Inc., who have just released their financial statements for the year ended December 20x5. These financial statements are included in Exhibits 1-3 below.

Exhibit 1

Busicomb Inc. Annual Income Statement	
Sales	721.9
Operating expenses	(417.0)
Operating profit	304.9
Gain on sale of fixed assets	9.6
Depreciation	(170.8).
Earnings before interest and tax	143.7
Interest expense	.(40.3)
Pre-tax income	103.4
Income taxes	.(31.0)
Net income	72.4

Exhibit 2

Busicomb Inc. Balance Sheet As of December 31 (in $ millions)		
	20x5	20x4
Current Asset	31.2	14.0
Cash and equivalents		
Accounts receivable	72.0	64.8
Inventories	501.7	453.7
Total current assets	604.9	532.5
Non-Current Assets		

Property, plant, and equipment	1138.7	982.7
Less: Accumulated depreciation	(370.0)	(216.0)
Net property, plant, and equipment	768.7	766.7
Total assets	1373.6	1299.2
Current Liabilities		
Accounts payable	60.1	62.5
Notes payable	30.0	20.0
Total current liabilities	90.1	82.5
Non-Current Liabilities		
Long term debt	576.0	588.0
Total liabilities	666.1	670.5
Shareholders Equity		
Common equity	384.0	360.0
Retained earnings	323.5	268.7
Total equity	707.5	628.7
Total liabilities and equity	1373.6	1299.2

Exhibit 3

Busicomb Inc. Cash Flow Statement For the year Ended December 31, 20x5 (in millions)		
Cash Flow from Operating Activities		
Net income		72.4
Depreciation		170.8
Gain on sale of fixed assets		(9.6)
Change in Working Capital		
(Increase) Decrease in accounts receivable	(7.2)	
(Increase) Decrease in inventories	(48.0)	
Increase (Decrease) in accounts payable	(2.4)	
Net change in working capital		(57.6)
Net cash from operating activities		176.0
Cash Flow from Investing Activities		
Purchase of property, plant, and equipment	(183.2)	
Proceeds on disposal of plant and equipment	20.0	
Net cash from investing activities		(163.2)
		12.8
Cash Flow from Financing Activities		
Change in debt outstanding	(2.0)	

Change in common stock	24.0	
Payment of cash dividend	(17.6)	
Net cash from financing activities		4.4
Net change in cash and cash equivalents		17.2
Cash at beginning of period		14.0
Cash at end of period		31.2

Busicomb Inc. announces a new strategic alliance that will require it to sell products on behalf of a very successful major European manufacturing and distribution operation. Binkster decides to value Busicomb using the dividend discount model (DDM) and the free cash flow-to-firm model (FCFF). Binkster undertakes a review of the financial performance of Busicomb Inc. using Exhibits 1 to 3 and forecasts related to the new sales contract, Binkster reaches the following conclusions:

- Earnings are expected to grow at 18%, next year before stabilizing to a long-term growth rate of 6% after six years (i.e., year 6). You can assume that the growth rate declines evenly each year between the high growth and the low growth period.
- The current payout ratio will be maintained, and the firm has a long-term target debt to capital ratio of 50%.
- Busicomb Inc. has an equity beta of 1.3.
- Government bond yield is 4.5% and the market equity risk premium is 6%.
- There are 12 million shares outstanding.
- The market value of the debt in the balance sheet of Busicomb Inc. is not materially different from the book value.
- The required rate of return of the debt holders is 7%.
- The effective tax rate of Busicomb is 30%.

44. Using the three components of the DuPont system, and using opening balance sheet values, which of the following statements regarding 20x5 is correct?
    (A) Total asset turnover is 0.556, financial leverage is 2.07, and ROE is 11.5%.
    (B) Total asset turnover is 1.798, financial leverage is 2.07, and ROE is 11.5%.
    (C) Total asset turnover is 0.556, financial leverage is 0.483, and ROE is 11.5%.

45. Assuming an ROE on 11.5%, which of the following is the best estimate of the sustainable growth rate for Busicomb Inc.?
    (A) 10.1%.
    (B) 8.7%.
    (C) 11.5%.

46. Which of the following is the most accurate estimate of the value of a share of Busicomb Inc.'s common stock using the H model variant of the dividend discount model (DDM)? Work to the nearest $ and assume the cost of equity is 12.3%.
    (A) $33 per share.
    (B) $32 per share.
    (C) $42 per share.

47. It has also been estimated that the Free Cash Flow to the firm will be $46m next year. It is expected to grow at 12% for the following two years before settling down to a long-term rate of growth of 6%. Which of the following is the most accurate estimate of the value of Busicomb Inc.'s business using a two stage FCFF model? Work to the nearest $m.
    (A) $2,402m.
    (B) $2,204m.
    (C) $1,968m.

48. An analyst is performing an equity valuation for a minority equity position in a dividend paying multinational. The appropriate model for this analysis is most likely:
    (A) FCFE approach.
    (B) The Dividend Discount approach.
    (C) FCFF approach.

49. In computing free cash flow, the most significant non-cash expense is usually:
    (A) depreciation.
    (B) deferred taxes.
    (C) capital expenditures

50. A firm has:
    - Free cash flow to equity = $4.0 million.
    - Cost of equity = 12%.
    - Long-term expected growth rate = 5%.
    - Value of equity per share = $57.14 per share.

    What will happen to the value of equity if the cost of equity decreases to 10%?
    (A) The value will increase.
    (B) There is insufficient information to tell.
    (C) The value will decrease.

51. Free cash flow approaches are the best source of value when:
    (A) return on assets is falling.
    (B) a firm has significant minority interest.
    (C) dividends are not paid.

52. The difference between the value estimate produced by the dividend discount model (DDM) and the one produced by the free cash flow to equity (FCFE) model can be accounted for by which of the following?
    (A) Different sales forecast.
    (B) Different estimates of model risk.
    (C) The value in controlling the firm's dividend policy.

53. In forecasting free cash flows it is common to assume that investment in working capital:
    (A) is greater than fixed capital investment during a growth phase.
    (B) will equal fixed capital investment.
    (C) will be financed using the target debt ratio.

54. Free cash flow (FCF) approaches are the best source of value when:
    (A) a firm has no preferred stock.
    (B) a firm has significant minority interest.
    (C) dividends are paid but do not reflect the company's capacity to pay dividends.

55. Valuation with free cash flow to equity and free cash flow to the firm:
    (A) use different discount rates.
    (B) both use the cost of equity.
    (C) both use the after-tax cost of debt.

56. Free cash flow to the firm (FCFF) adjusts earnings before interest and taxes (EBIT) by:
    (A) subtracting investments in fixed capital and working capital.
    (B) adding taxes, deducting depreciation, and adding back the investments in fixed capital and working capital.
    (C) deducting taxes, adding back depreciation, and deducting the investments in fixed capital and working capital.

57. BOX Inc. earned $4.55 per share last year. The firm had capital expenditures of $1.75 per share and depreciation expense of $1.05. BOX Inc. has a target debt ratio of 0.25.

	High-Growth Period	Transitional Period	Stable-Growth Period
Duration	2 Years	5 Years	
Earnings growth rate	45%	Will decline 8% per year to5% in	5%

		the stable-growth period	
Growth in capital expenditures	30%	Increases by 8% per year	Same as Depreciation
Growth in depreciation	30%	Increases by 13% per year	Same as Capital Expenditure
Change in Working Capital	Given Below	Given Below	$2.25 per share in Year 8
Shareholder Required Return	25%	15%	10%

	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
EPS	4.55	6.60	9.57	13.11	16.91	20.46	23.12	24.27
Capital Expenditures	1.75	2.28	2.96	3.19	3.45	3.73	4.02	4.35
Depreciation	1.05	1.37	1.77	2.01	2.27	2.56	2.89	3.27
Change in WC	0.90	1.10	1.40	1.60	1.80	2.00	2.20	2.10
FCFE			7.63	11.01	14.67	18.08	20.62	21.89

In year 1, what is the free cashflow to equity (FCFE) for BOX Inc.?

(A) $3.35.

(B) $6.10.

(C) $5.09.

58. The one-stage (stable growth) free cash flow models assume:

(A) the required rate of return exceeds the growth rate.

(B) the required rate of return is less than the growth rate.

(C) a constant growth rate for *n* years and a high growth rate forever thereafter.

Burcar-Eckhardt, a firm specializing in value investments, has been approached by the management of Overhaul Trucking, Inc., to explore the possibility of taking the firm private via a management buyout. Overhaul's stock has stumbled recently, in large part due to a sudden increase in oil prices. Management considers this an opportune time to take the company private. Burcar would be a minority investor in a group of friendly buyers.

Jaimie Carson, CFA, is a private equity portfolio manager with Burcar. He has been asked by Thelma Eckhardt, CFA, one of the firm's founding partners, to take a look at Overhaul and come up with a strategy for valuing the firm. After analyzing Overhaul's financial statements as of the most recent fiscal year-end (presented below), he determines that a

valuation using Free Cash Flow to Equity (FCFE) is most appropriate. He also notes that there were no sales of PPE.

Overhaul Trucking, Inc. Income Statement April 30, 2005 (Millions of dollars)		
	2005	**2006E**
Sales	300.0	320.0
Gross Profit	200.0	190.0
SG&A	50.0	50.0
Depreciation	70.0	80.0
EBIT	80.0	60.0
Interest Expense	30.0	34.0
Taxes (at 35 percent)	17.5	9.1
Net Income	**32.5**	**16.9**

Overhaul Trucking, Inc. Balance Sheet April 30, 2005 (Millions of dollars)		
	2005	**2006E**
Cash	10.0	15.0
Accounts Receivable	50.0	55.0
Gross Property, Plant & Equip.	400.0	480.0
Accumulated Depreciation	(160.0)	(240.0)
Total Assets	**300.0**	**310.0**
Accounts Payable	50.0	70.0
Long-Term Debt	140.0	113.1
Common Stock	80.0	80.0
Retained Earnings	30.0	46.9
Total Liabilities & Equity	**300.0**	**310.0**

Eckhardt agrees with Carson's choice of valuation method, but her concern is Overhaul's debt ratio. Considerably higher than the industry average, Eckhardt worries that the firm's heavy leverage poses a risk to equity investors. Overhaul Trucking uses a weighted average cost of capital of 12% for capital budgeting, and Eckhardt wonders if that's realistic.

59. Which of the following is one of the differences between FCFE and FCFF? FCFF does not deduct:

(A) operating expenses.
(B) working capital investment.
(C) interest payments to bondholders.

60. Which of the following is the least likely reason for Carson's decision to use FCFE in valuing Overhaul rather than FCFF?
(A) Overhaul's capital structure is stable.
(B) FCFE is an easier and more straightforward calculation than FCFF.
(C) Overhaul's debt ratio is significantly higher than the industry average.

61. What is the expected growth rate in FCFF that Carson must have used to generate his valuation of $1.08 billion?
(A) 5%.
(B) 7%.
(C) 12%.

62. If Carson had estimated FCFE under the assumption that Overhaul Trucking maintains a target debt-to-asset ratio of 36 percent for new investments in fixed and working capital, what would be his forecast of 2006 FCFE?
(A) $26.5 million.
(B) $9.6 million.
(C) $16.9 million.

63. A firm currently has sales per share of $10.00, and expects sales to grow by 25% next year. The net profit margin is expected to be 15%. Fixed capital investment net of depreciation is projected to be 65% of the sales increase, and working capital requirements are 15% of the projected sales increase. Debt will finance 45% of the investments in net capital and working capital. The company has an 11% required rate of return on equity. What is the firm's expected free cash flow to equity (FCFE) per share next year under these assumptions?
(A) $0.38.
(B) $0.77.
(C) $1.88.

64. The three-stage FCFE model might result in an extremely high value if:
(A) the growth rate in the stable-period is too high.
(B) the growth rate in the stable-period is equal to that of GNP.
(C) the growth rate in the stable-period is too low.

65. Free cash flow to the firm valuation uses which discount rate?
(A) After-tax cost of debt.
(B) Cost of equity.
(C) Weighted average cost of capital.

Michael Ballmer is an equity analyst with New Horizon Research. The firm has historically relied on dividend and residual income valuation models to value equity, but the firm's director of research, Doug Leads, has decided that the firm needs to incorporate free cash flow valuations into its practices. Therefore, Leads decides to send Ballmer to a seminar on free cash flow valuation.

Upon his return from the convention, Ballmer is excited to share his newfound knowledge with his co-workers. Ballmer is asked to give a debriefing to New Horizon's team of equity analysts, where he makes the following statements:

Statement 1: Free cash flow to the firm is the amount of the firm's cash flow that is free for the firm to use in making investments after cash operating expenses have been covered.

Statement 2: Free cash flow to equity, then, is the amount of the firm's cash flow that is free for equity holders after covering cash operating expenses, working capital and fixed capital investments, interest principal payments to bondholders, and required divided payments.

After discussing the calculation of free cash flow to the firm and free cash flow to equity from historical information, Ballmer proceeds to explain the major approaches for forecasting free cash flow. He focuses his discussion on forecasting the components of free cash flow as this method is more flexible. During his presentation, several of the analysts notice that the formula for forecasting free cash flow to equity does not include net borrowing. They bring this to Ballmer's attention, and he states that he will look into the formula and send out an updated presentation after the meeting.

A week after the meeting, Jonathan Hodges approached Ballmer regarding two issues he had while applying free cash flow based valuations. The first issue that Hodges had was that he calculated the equity value of a firm using both free cash flow to equity based and dividend-based valuations and arrived at different values. The second issue that Hodges came across was the effect of a change in a firm's target leverage on FCFE. One of the firms that Hodges was analyzing may reduce leverage, and Hodges needs to know if this will affect his valuation.

66. Regarding statements 1 and 2, are Ballmer's interpretations of free cash flow to the firm (FCFF) and free cash flow to equity (FCFE) CORRECT?

(A) No, only one interpretation is correct.

(B) Yes, both interpretations are correct.

(C) No, neither interpretation is correct.

67. Which of the following statements regarding forecasting FCFE using the components of free cash flow method and net borrowing is most accurate?

(A) Net income already accounts for interest expense; therefore, net borrowing is not needed.

(B) Investment in fixed capital and net borrowing are assumed to offset each other.

(C) The target debt-to-asset ratio accounts for the financing of new investment in fixed capital and working capital.

68. Should dividend-based and free cash flow from equity (FCFE) based valuations result in different equity values for a firm?
    (A) Yes, dividend-based valuations would be higher for firms with large, consistent dividends.
    (B) No, both models should result in the same value.
    (C) Yes, the free cash flow from equity valuation would be higher if there were a premium associated with control of the firm.

69. Which of the following statements regarding the effect a decrease in leverage has on a firm's free cash flow from equity (FCFE) is most accurate?
    (A) Current year FCFE decreases, but future FCFE will be increased.
    (B) FCFE is unaffected by changes in leverage.
    (C) Current year FCFE increases, but future FCFE will be reduced.

70. An analyst has prepared the following scenarios for Schneider, Inc.:

Scenario 1 Assumptions

- Tax Rate is 40%.
- Weighted average cost of capital (WACC) = 12%.
- Constant growth rate in free cash flow = 3%.
- Last year, free cash flow to the firm (FCFF) = $30.
- Target debt ratio = 10%.

Scenario 2 Assumptions

- Tax Rate is 40%.
- Earnings before interest and taxes (EBIT), capital expenditures, and depreciation will grow at 15% for the next three years.
- After three years, the growth in EBIT will be 2%, and capital expenditure and depreciation will offset each other.
- Weighted average cost of capital (WACC) during high growth stage = 20%.
- Weighted average cost of capital (WACC) during stable growth stage = 12%.
- Target debt ratio = 10%.

Scenario 2 FCFF	Year 0 (last year)	Year 1	Year 2	Year 3	Year 4
EBIT	$15.00	$17.25	$19.84	$22.81	$23.27
Capital Expenditures	6.00	6.90	7.94	9.13	
Depreciation	4.00	4.60	5.29	6.08	
Change in Working Capital	2.00	2.10	2.20	2.40	2.40
FCFF		5.95	7.06	8.25	11.56

Given the assumptions contained in Scenario 2, what is the value of the firm?

(A) $81.54.

(B) $70.39.

(C) $96.92.

71. The primary difference between the three-stage DDM and the FCFE model is:

(A) growth rate assumptions.

(B) the definition of cash flows.

(C) cost of equity.

72. The two-stage (stable growth) free cash flow to equity (FCFE) and free cash flow to the firm (FCFF) models typically assume:

(A) high growth in free cash flow for n years and then constant growth in free cash flow forever after.

(B) a high level of free cash flow for n years and then a lower level of free cash flow thereafter

(C) growth of free cash flow that declines to the required rate of return in the last stage.

73. Industrial Light currently has:

- Free cash flow to equity = $4.0 million.
- Cost of equity = 12%.
- Weighted average cost of capital = 10%.
- Total debt = $30.0 million.
- Long-term expected growth rate = 5%.

What is the value of equity?

(A) $60,000,000.

(B) $57,142,857.

(C) $27,142,857.

TOY, Inc. is a company that manufactures dolls, games, and other items to entertain children.

The following table provides background information for TOY, Inc. on a per share basis in the year 0:

Current information	Year 0
Earnings	$5.00
Capital Expenditures	$2.40
Depreciation	$1.80
Change in Working Capital	$1.70
Cost of equity	12.0%

Target debt ratio	30.0%
Market value of stock	$56.00
Shares outstanding	5.0 million
Interest expense	$7.2 million
Cash & short-term investments	$40.0 million
Tax rate	37.5%

Earnings, capital expenditures, depreciation, and working capital are all expected to grow by 5.0% per year in the future.

74. In year 1, the forecasted free cash flow to equity (FCFE) for TOY, Inc. is closest to:
(A) $3.56.
(B) $4.31.
(C) $4.53.

75. The value of TOY, Inc.'s stock given the above assumptions, is closest to:
(A) $50.86.
(B) $64.71.
(C) $61.57.

76. Comparing the current market value of TOY to our estimate of the stock's current market value, it is most likely that at the current market price of $56.00, TOY Inc. stock is:
(A) overvalued.
(B) undervalued.
(C) fairly valued.

77. Senior management of TOY Inc. is considering selling the company to a rival firm that has offered $450 million. If the current market price represents the fair value of equity and TOY Inc. maintains its target capital structure, the bid represents a price that is:
(A) less than the total value of the firm.
(B) about the same total value of the firm.
(C) greater than the total value of the firm.

78. In the stable-growth FCFE model, an extremely low value can result from all of the following EXCEPT:
(A) the required rate of return is too high for a stable firm.
(B) the expected growth rate is too high for a stable firm.
(C) capital expenditures are too high relative to depreciation.

79. A firm currently has the following per share values:
- Cash flow from operations (CFO) is $49.50.
- Investment in fixed capital is $40.00.
- Net borrowing is $7.50.

What is the current per share free cash flow to equity (FCFE)?

(A) $16.50.
(B) $17.00.
(C) $97.00.

80. Which of the following is least likely to change as the firm changes leverage?

(A) Free cash flows to firm (FCFF).
(B) Weighted average cost of capital (WACC).
(C) Free cash flows to equity (FCFE).

81. In five years, a firm is expected to be operating in a stage of its life cycle wherein its expected growth rate is 5%, indefinitely; its required rate of return on equity is 11%; its weighted average cost of capital is 9%; and the free cash flow to equity in year 6 will be $5.25 per share. What is its projected terminal value at the end of year 5?

(A) $87.50.
(B) $51.93.
(C) $131.25.

82. A three-stage free cash flow to the firm (FCFF) is typically appropriate when:

(A) growth is currently low and will move through a transitional stage to a final stage wherein growth exceeds the required rate of return.
(B) growth is currently high and will move through a transitional stage to a steady-state growth rate.
(C) the required rate of return is less than the growth rate in the last stage.

83. Currently, a firm has no outstanding debt. If the firm would add a small amount of leverage to its balance sheet, what should be the impact on the firm's value? There would be:

(A) an increase in value due to interest tax shields.
(B) a decrease in value due to higher interest expense.
(C) no change in firm value.

84. SOX Inc. expects high growth in the next 4 years before slowing to a stable future growth of 3%. The firm is assumed to pay no dividends in the near future and has the following forecasted free cash flow to equity (FCFE) information on a per share basis in the high-growth period:

	Year 1	Year 2	Year 3	Year 4
FCFE	$3.05	$4.10	$5.25	$6.71

High-growth period assumptions:

- SOX Inc.'s target debt ratio is 40% and a beta of 1.3.
- The long-term Treasury Bond Rate is 4.0%, and the expected equity risk premium is 6%.

Stable-growth period assumptions:

- SOX Inc.'s target debt ratio is 40% and a beta of 1.0.
- The long-term Treasury Bond Rate is 4.0% and the expected equity risk premium is 6%.
- Capital expenditures are assumed to equal depreciation.
- In year 5, earnings are $8.10 per share while the change in working capital is $2.00 per share.
- Earnings and working capital are expected to grow by 3% a year in the future.

In year 5, what is the free cash flow to equity (FCFE) for SOX Inc.?

(A) $7.30.
(B) $6.10.
(C) $6.90.

85. The repurchase of 20% of a firm's outstanding common shares will cause free cash flow to the firm (FCFF) to:

(A) remain the same.
(B) increase.
(C) decrease.

86. A firm has projected free cash flow to equity next year of $1.25 per share, $1.55 in two years, and a terminal value of $90.00 two years from now, as well. Given the firm's cost of equity of 12%, a weighted average cost of capital of 14%, and total outstanding debt of $30.00 per share, what is the current value of equity?

(A) $71.74.
(B) $41.54.
(C) $74.10.

87. When using the two-stage FCFE model, if increases in working capital appear too high the analyst should:

(A) switch to a three-stage model.
(B) normalize them to be equal to zero.
(C) use changes that are based upon a working capital ratio that is closer to the industry average.

88. In forecasting free cash flows it is most common to assume that:

(A) historical levels of free cash flow will persist.

(B) the firm capital structure is static.

(C) the firm has no non-cash expenses.

89. The ownership perspective implicit in the free cash flow to equity valuation approach is of:

(A) a minority position.

(B) a preferred stockholder.

(C) control.

90. The following information is derived from the financial records of Brown Company for the year ended December 31, 2004:

Sales	$3,400,000
Cost of Goods Sold (COGS)	(2,100,000)
Depreciation	(300,000)
Interest Paid	(200,000)
Gain on Sale of Old Equipment	400,000
Income Taxes Paid	(300,000)
Net Income	**$900,000**

- Brown issued bonds on June 30, 2004 and received proceeds of $4,000,000.
- Old equipment with a book value of $2,000,000 was sold on August 15, 2004 for $2,400,000 cash.
- Brown purchased land for a new factory on September 30, 2004 for $3,000,000, issuing a $2,000,000 note and paying the balance in cash.

Cash flow from operations less capital expenditures is:

(A) $6,200,000.

(B) $2,200,000.

(C) $200,000.

91. Ignoring any costs related to financial distress, if a firm increases its financial leverage, the value of the firm should:

(A) increase because the weighted average cost of capital will be lower due to interest tax shields.

(B) increase because the FCFF will increase.

(C) decrease because the required rate of return on debt is lower than that of equity.

92. Which of the following free cash flow to the firm (FCFF) models is most suited to analyze firms that are growing at a faster rate than the overall economy?

(A) High growth FCFF model.
(B) Two-stage FCFF model.
(C) No growth FCFF model.

93. Free cash flow (FCF) approaches are the best source of value when:
(A) a firm is paying a dividend that is higher than the industry average.
(B) FCFs track profitability closely over the analyst's forecast horizon.
(C) a firm has preferred stock.

94. The following table provides forecasts for next year on a per share basis for TOY Inc.:

Item	Forecast
Earnings	$5.00
Capital Expenditures	$2.40
Depreciation	$1.80
Change in Working Capital	$1.70

TOY Inc.'s target debt ratio is 30% and has a required rate of return of 12%. Earnings, capital expenditures, depreciation, and working capital are all expected to grow by 5% a year in the future. Assume that capital expenditures and working capital are financed at the target debt ratio.

What is the forecasted free cashflow to equity (FCFE) for TOY Inc.?
(A) $3.39.
(B) $2.70.
(C) $4.31.

95. Mark Washington, CFA, uses a two-stage free cash flow to equity (FCFE) discount model to value Texas Van Lines. His analysis yields an extremely low value, which he believes is incorrect. Which of the following is least likely to be a cause of this suspect valuation estimate?
(A) The forecast of working capital as a percentage of revenues in the stable growth period is not large enough to maintain the long-term sustainable growth rate.
(B) The cost of equity estimate in the stable growth period is too high for a stable firm
(C) Earnings are temporarily depressed because of a one-time extraordinary account charge in the most recent fiscal year.

The following information was collected from the financial statements of Hiller GmbH, a German consulting company, for the year ending December 31, 2013:
- Earnings per share = €4.50.
- Capital Expenditures per share = €3.00.
- Depreciation per share = €2.75.
- Increase in working capital per share = €0.75.
- Debt financing ratio = 30.0%.
- Cost of equity = 12.0%.

- Cost of debt = 6.0%.
- Tax rate = 30.0%.
- Outstanding shares = 100 million.
- New debt borrowing = €15.0 million.
- Debt repayment = €30.0 million.
- Interest expense = €7.1 million.

The financial leverage for the firm is expected to be stable. Hiller uses IFRS accounting standards and records interest expense as cash flow from financing (CFF).

Two analysts are valuing Hiller stock; both are basing their analysis on FCFE approaches.

Analyst #1 remarks: "Hiller is a relatively mature company; a constant growth model is the better approach."

Analyst #1 estimates FCFE based on the information above and a growth rate of 5.0%.

Analyst #2 states: "Hiller just acquired a rival that should change their growth pattern. I think a three stage growth model based on industry growth patterns should be used."

Analyst #2 estimates FCFE per share as €3.85. Growth rate estimates are listed below, and from year 7 and thereafter the estimated growth rate is 3.0%.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7+
Growth rates	12.5%	12.5%	12.5%	8.0%	6.5%	5.0%	3.0%

96. Assuming a constant debt-to-asset ratio, the base year FCFE is closest to:
(A) €3.00.
(B) €3.80.
(C) €4.85.

97. Using the stable-growth FCFE model as suggested by Analyst #1, the value of Hiller stock is closest to:
(A) €51.58.
(B) €54.29.
(C) €57.00.

98. Based on Analyst #2's estimates, the sum of the terminal value plus the FCFE for year 6 is closest to:
(A) €75.80.
(B) €60.70.
(C) €82.40.

99. Based on Analyst #2's estimates, the value of Hiller stock is closest to:
(A) €60.70.
(B) €59.70.
(C) €57.00.

100. How many of the FCFF definitions, in Exhibit 3, that Tony is studying are accurate?
   (A) Both.
   (B) Neither.
   (C) Only FCFF from EBIT.

101. Terminal value in multi-stage free cash low valuation models is often calculated as the present value of:
   (A) free cash flow divided by the growth rate.
   (B) a constant growth model's price as of the beginning of the last stage.
   (C) a two–stage valuation model's price.

102. The stable growth free cash flow to the firm (FCFF) model is most useful in valuing firms that:
   (A) have capital expenditures that are significantly higher than depreciation.
   (B) have capital expenditures that are not significantly higher than depreciation.
   (C) are growing at a rate significantly lower than that of the overall economy.

103. Terminal value in a multi-stage free cash flow to equity (FCFE) valuation model is often calculated as the present value of:
   (A) free cash flow divided by the growth rate.
   (B) a two-stage valuation model's price.
   (C) FCFE divided by the total of required rate equity minus growth.

An analyst has prepared the following scenarios for Schneider Inc.:

Scenario 1 Assumptions:

- Tax Rate is 40%.
- Weighted average cost of capital (WACC) = 12.0%.
- Constant growth rate in free cash flow (FCF) = 3.0%.
- Year 0, free cash flow to the firm (FCFF) = $30.0 million
- Target debt ratio = 10.0%.

Scenario 2 Assumptions:

- Tax Rate is 40.0%.
- Expenses before interest and taxes (EBIT), capital expenditures, and depreciation will grow at 20.0% for the next three years.
- After three years, the growth in EBIT will be 2.0%, and capital expenditure and depreciation will offset each other.
- Weighted average cost of capital (WACC) = 12.0%
- Target debt ratio = 10.0%.

Scenario 2 FCFF (in $ millions)	Year 0	Year 1	Year 2	Year 3	Year 4

EBIT	$45.00	$54.00	$64.80	$77.76	$79.70
Capital Expenditures	18.00	21.60	25.92	31.10	
Depreciation	12.00	14.40	17.28	20.74	
Change in Working Capital	6.00	6.30	6.60	7.20	7.20
FCFF		18.90	23.64	29.09	40.62

Other financial items for Schneider Inc.:

Estimated market value of debt = $35.0 million

Cost of debt = 5.0%

Shares outstanding = 20 million.

104. Given the assumptions contained in Scenario 1, the value of the firm is most accurately estimated as:
   (A) $343 million.
   (B) $333 million
   (C) $250 million.

105. In Scenario 2, the value of the firm is closest to:
   (A) $315 million.
   (B) $346 million.
   (C) $321 million.

106. The cost of equity for Schneider Inc. is closest to:
   (A) 13.0%.
   (B) 5.8%.
   (C) 11.3%.

107. The market value of Schneider Inc.'s stock is:
   (A) $17.50 per share.
   (B) $31.50 per share.
   (C) $15.75 per share

108. The stable-growth free cash flow to equity (FCFE) model is best suited for which of the following types of companies? Companies:
   (A) with significant barriers to entry.
   (B) with patents that will not expire for 20 or more years.
   (C) growing at a rate similar or less than the nominal growth rate of the economy.

109. Which of the following types of company is the E-Model, a three-stage free cash flow to equity (FCFE) Model, best suited for? Companies:
   (A) in high growth industries that will face increasing competitive pressures over time, leading to a gradual decline in growth to a stable level.
   (B) growing at a rate similar to or less than the nominal growth rate of the economy.
   (C) with patents or firms in an industry with significant barriers to entry.

110. A firm's free cash flow to equity (FCFE) in the most recent year is $50M and is expected to grow at 5% per year forever. If its shareholders require a return of 12%, the value of the firm's equity using the single-stage FCFE model is:
   (A) $714M.
   (B) $750M.
   (C) $417M.

111. Free cash flow to equity valuation uses which discount rate?
   (A) After-tax cost of debt.
   (B) Weighted average cost of capital.
   (C) Cost of equity.

112. If the investment in fixed capital and working capital offset each other, free cash flow to the firm (FCFF) may be proxied by:
   (A) earnings before interest and taxes (EBIT).
   (B) net income plus non-cash charges plus after-tax interest.
   (C) net income plus after-tax interest.

113. The value of stock under the two-stage FCFE model will be equal to:
   (A) present value (PV) of FCFE during the extraordinary growth period plus the PV of terminal value.
   (B) present value (PV) of FCFE during the extraordinary growth and transitional periods plus the PV of terminal value.
   (C) present value (PV) of FCFE during the extraordinary growth period plus the terminal value.

114. A biotech firm is currently experiencing high growth and pays no dividends. One of their product patents is scheduled to expire in 5 years. This firm would be a good candidate for which of the following valuation models?
   (A) Single-stage free cash flow to equity (FCFE).
   (B) Two-stage dividend discount model (DDM).
   (C) Two-stage free cash flow to equity (FCFE).

115. A firm has:

- Free cash flow to the firm = $4.0 million.
- Weighted average cost of capital = 10%.
- Total debt = $30.0 million.
- Long-term expected growth rate = 5%.
- Value of the firm = $50.00 per share.

What will happen to the value of the firm if the weighted average cost of capital increases 12%?

(A) The value will increase.

(B) The value will decrease.

(C) The value will remain the same.

116. An analyst has prepared the following scenarios for Schneider, Inc.:

Scenario 1 Assumptions:

- Tax rate is 40%.
- Weighted average cost of capital (WACC) = 12%.
- Constant growth rate in free cash flow = 3%.
- Last year, free cash flow to the firm (FCFF) = $30.
- Target debt ratio = 10%.

Scenario 2 Assumptions:

- Tax rate is 40%.
- Expenses before interest and taxes (EBIT), capital expenditures, and depreciation will grow at 15% for the next three years.
- After three years, the growth in EBIT will be 2%, and capital expenditure and depreciation will offset each other.
- WACC during high growth stage = 20%.
- WACC during stable growth stage = 12%.
- Target debt ratio = 10%.

Scenario 2 FCFF	Year 0 (last year)	Year 1	Year 2	Year 3	Year 4
EBIT	$15.00	$17.25	$19.84	$22.81	$23.27
Capital Expenditures	6.00	6.90	7.94	9.13	
Depreciation	4.00	4.60	5.29	6.08	
Change in Working Capital	2.00	2.10	2.20	2.40	2.40
FCFF		5.95	7.06	8.25	11.56

Assuming that Schneider, Inc., slightly increases its financial leverage, what should happen to its firm value? The firm value should:

(A) decline due to the increase in risk.

(B) not change because financial leverage has no relationship with firm value.

(C) increase due to the additional value of interest tax shields.

117. On a per share basis for a firm:

- Sales are $10.00.
- Earnings per share (EPS) is $4.00.
- Depreciation is $3.00.
- After-tax interest is $2.40.
- Investment in working capital is $1.50.
- Investment in fixed capital is $2.00.

What is the firm's expected free cash flow to the firm (FCFF) per share?

(A) $2.90.

(B) $7.50.

(C) $5.90.

118. If the investment in fixed capital and working capital offset each other, free cash flow to the firm (FCFF) may be proxied by:

(A) earnings before interest and taxes (EBIT).

(B) net income plus after-tax interest.

(C) after-tax EBIT plus non-cash charges.

Harrisburg Tire Company (HTC) forecasts the following for 2013:

- Earnings (net income) = $600M.
- Dividends = $120M.
- Interest expense = $400M.
- Tax rate = 40.0%.
- Depreciation = $500M.
- Capital spending = $800M.
- Total assets = $10B (book value and market value).
- Debt = $4B (book value and market value).
- Equity = $6B (book value and market value).
- Target debt to asset ratio = 0.40.
- Shares outstanding = 2.0 billion

The firm's working capital needs are negligible, and HTC plans to continue to operate with the current capital structure. The tire industry demand is highly dependent on

demand for new automobiles. Individual companies in the industry don't have much influence on the design of automobiles and have very little ability to affect their business environment. The demand for new automobiles is highly cyclical but demand forecast errors tend to be low.

119. The firm's earnings growth rate is most accurately estimated as:
   (A) 6.4%.
   (B) 8.0%.
   (C) 4.8%.

120. The 2013 forecasted free cash flow to equity is:
   (A) $300M.
   (B) $340M.
   (C) $420M.

121. If the total market value of equity is $6.0 billion and the growth rate is 8.0%, the cost of equity based on the stable growth FCFE model is closest to:
   (A) 7.0%.
   (B) 15.0%.
   (C) 14.0%.

122. The beta for HTC is 1.056, the risk-free rate is 5.0% and the market risk premium is 10.0%. The weighted average cost of capital for HTC is closest to:
   (A) 13.34%.
   (B) 15.56%.
   (C) 11.74%.

123. The two-stage FCFE model is suitable for valuing firms that:
   (A) have moderate growth in the initial phase that declines gradually to a stable rate.
   (B) are in an industry with significant barriers to entry.
   (C) have very high but declining growth rate in the initial stage.

124. The following information pertains to the Harrisburg Tire Company (HTC) in 2000.
   - Earnings (net income) = $600M.
   - Dividends = $120M.
   - Interest expense = $400M.
   - Tax rate = 40%.
   - Depreciation = $500M.
   - Capital spending = $800M.

- Total assets = $10B (book value and market value).
- Debt = $4B (book value and market value).
- Equity = $6B (book value and market value).

The firm's working capital needs are negligible, and they plan to continue to operate at their current capital structure.

The free cash flow to the firm is:

(A) $540M.

(B) $420M.

(C) $300M.

125. A firm's free cash flow to the firm (FCFF) in the most recent year is $80M and is expected to grow at 3% per year forever. If the firm has $100M in debt financing and its weighted average cost of capital is 10%. The value of the firm's equity using the single-stage FCFF model is:

(A) $1,177M.

(B) $1,077M.

(C) $1,043M.

126. The estimate of value from FCFE models will always be different than the value obtained using DDM, if:

(A) FCFE is higher than dividends.

(B) FCFE is higher than dividends, and the excess is invested in zero NPV projects.

(C) FCFE is greater than dividends, and the excess is not invested in zero NPV

127. Which of the following statements regarding the FCFF models is most accurate? The two-stage FCFF model is more useful than the stable-growth FCFF model when the firm is growing at a rate:

(A) significantly lower than that of the overall economy.

(B) not significantly higher than that of the overall economy.

(C) significantly higher than that of the overall economy

128. Optimal capital structure is the mix of debt and equity that will maximize the value of the firm and minimize:

(A) the firm's cost of capital.

(B) agency costs of equity.

(C) the amount of taxable profit reported.

The following information was collected from the financial statements of Bankers Industrial Corp (BIC) for the year ended December 31, 2013.

- Earnings before interest and taxes (EBIT) = $6.00 million.

- Capital expenditures = $1.25 million.
- Depreciation expense = $0.63 million.
- Working capital additions = $0.59 million.
- Cost of debt = 10.50%.
- Cost of equity = 16.00%.
- Stable growth rate for FCFF = 7.00%.
- Stable growth rate for FCFE = 10.00%.
- Market value of debt = $20.00 million.
- Book value of debt = $22.50 million.
- Outstanding shares = 500,000.
- Interest expense = $2.00 million.
- New Debt borrowing = $3.30 million.
- Debt repayment = $2.85 million.
- Growth rates for two-stage growth model for FCFE:
  - 25.0% for Years 1–3.
  - 6.0% for Years 4 and thereafter.

BIC is currently operating at their target debt ratio of 40.00%. The firm's tax rate is 40.00%.

129. The free cash flow to the firm (FCFF) for the current year is closest to:
(A) $2.39 million.
(B) $2.31 million.
(C) $3.57 million.

130. The estimated value of the firm is closest to:
(A) $50 million.
(B) $47 million.
(C) $38 million.

131. If the estimated value of the free cash to the firm (FCFF) for year 0 is $2.4 million, the value per share of BIC stock, based on the stable growth model, is closest to:
(A) $39.
(B) $55.
(C) $61.

132. The current market price of BIC is $62.50 per share, and the current year's FCFE is $1.75 million. Using a two-stage growth model to find the estimated the firm's value, the current market price BIC is most accurately described as:
(A) overvalued.
(B) undervalued.
(C) fairly valued.

William Bolton is an avid disc golf player and the owner of Deep in the Game Discs (DITGD), a business involved in wholesale distribution of discs and other disc golf equipment. DITGD supplies smaller outlets within the U.S. market and exports overseas. Will has built his business organically over a 20-year period, starting as a hobby but developing into a mid-sized business.

Will has recently lost some UK export customers to a smaller UK located competitor called Fishy Discs Ltd. Will recently met Neil Prebble, the owner of Fishy Discs at a trade fair and was considering a friendly acquisition in order to expand his business into the UK market.

Will has employed an accountancy firm with a corporate finance division, to give him some indication of a price to offer for Fishy Discs: 'W

Exhibit 1: Fishy Discs—Selected Financial Information

Income Statement Period Ended 31st December 20x9		
	£	£
Sales revenue		200,000
Expenses:		
Cost of goods sold	80,000	
Salaries	10,000	
Depreciation	140,000	
Interest	1,000	
		105,000
		95,000
Gain from sale of PP&E		20,000
Pre-tax income		115,000
Provision for taxes		40,000
Net income		75,000

Balance Sheet Year Ended 20x9		
	20x8 £	20x9 £
Current Assets		
Cash	18,000	66,000
Accounts receivable	18,000	20,000
Inventory	14,000	10,000

Non-Current Assets		
Gross PP&E	282,000	312,000
Accumulated depreciation	(80,000)	(84,000)
Total Assets	**252,000**	**324,000**
Current Liabilities		
Accounts payable	10,000	18,000
Salaries payable	16,000	9,000
Interest payable	6,000	7,000
Taxes payable	8,000	10,000
Dividends payable	2,000	12,000
Non-Current Liabilities		
Long term debt	20,000	30,000
Deferred tax	30,000	40,000
Stockholders' Equity		
Contributed capital	100,000	80,000
Retained earnings	60,000	118,000
Liabilities and Equity	**252,000**	**324,000**

On review of the PP&E footnote disclosure, it is discovered that equipment with a carrying value of £10,000 had been disposed of during 20x9.

All long-term debt is issued with a coupon such that the debt will trade at par value on issuance.

The effective tax rate relating to Fishy Discs is 40%.

Deferred tax liabilities are not expected to reverse for the foreseeable future.

The corporate finance firm employed by Will has decided to value Fishy Discs based on sustainable free cash flow, after removing one off items from the cash flow statement. In addition, they have considered how long Fishy Discs will be able to maintain its cash flow growth rates. Fishy Discs currently is the only domestically located UK supplier of disc golf equipment. Their results are included in Exhibit 2.

Exhibit 2: Fishy Discs Ltd. Valuation Data

Free cash flow to the firm (base period estimate)	£75,000
High growth rate	2%
Sustainable growth rate	4%
Duration of high growth	4 years
Declining growth duration	6 years

Cost of equity	10%
WACC	8%

The corporate finance team believes the market value Fishy Discs debt is close to book value in the 20x9 account. The team believes that the decline in growth from 12% down to 4% will be linear.

Tony Cermak is a young modeler in the corporate finance team and he has raised a couple of comments regarding the valuation figures prepared for Fishy Discs.

Concern 1: Fishy Discs reduced its inventory between 20x8 and 20x9. This lead to a boost of £4,000 in cash flows in 20x9. Given inventory, levels cannot decline below zero and we are forecasting Fishy Discs to grow, any boost to cash flow from inventory reduction is likely to be transitory and should be removed from sustainable cash flow.

Concern 2: Fishy Discs current high growth rates are linked to an exclusivity agreement that Prebble has with a U.S. disc producer. This agreement gives Fishy Discs sole supplier status for the global number one selling brand in the UK for a four-year period. At the end of this period, the U.S. supplier has indicated that other firms will be allowed to import and retail these products in the UK market. Given this, I believe our growth rate assumptions detailed in Exhibit 2 are unrealistic.

Tony has been given the firms free cash flow valuation model guide to study before he attempts to value Fishy Discs. In particular, he is interested in the following formulas that have been given:

Exhibit 3: Cash Flow Valuation Guide Extract

FCFF from EBIT:

FCFF = EBIT(1 – T) + depreciation FC_{INV} WCI_{NV}

FCFF from EBITDA:

FCFF = EBITDA(1 – T) + depreciation – FC_{INV} – WCI_{Nv}

133. Using the information available in Exhibit 1, Operating Cash Flow (CFO) for Fishy Discs is closest to?
   (A) £73,000.
   (B) £75,000.
   (C) £85,000.

134. Using the information available in Exhibit 1, capital expenditure for Fishy Discs is closest to?
   (A) £20,000.
   (B) £30,000.
   (C) £50,000.

135. Assuming a CFO figure of £75,000 and capital expenditure of £20,000, Fishy Discs free cash flow to the firm for 20x9 is closest to?

(A) £55,600.

(B) £65,000.

(C) £75,600.

136. Using only the corporate finance firm's data in Exhibit 2 and their growth assumptions, the value of Fishy Discs Ltd.'s equity is closest to?

(A) £2,033,000.

(B) £3,075,000.

(C) £3,105,000.

137. How many on of Tony's concerns are valid?

(A) Both.

(B) Neither.

(C) Only concern 2.