Student name:\_\_\_\_\_\_\_\_\_\_

**MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.  
1)** \_\_\_\_\_\_\_\_ cash flows are the changes in a firm’s future cash flows that are a direct result of accepting a project.

1) \_\_\_\_\_\_

A) Incremental   
 B) Stand-alone  
 C) Opportunity  
 D) Equivalent annual  
 E) Erosion

**2)** A cost that has already been paid, or a liability that has already been incurred, is classified as a(n):

2) \_\_\_\_\_\_

A) salvage value expense.   
 B) net working capital expense.  
 C) sunk cost.  
 D) opportunity cost.  
 E) erosion cost.

**3)** A(n) \_\_\_\_\_\_\_\_ is the most valuable investment forgone if an alternative investment is chosen.

3) \_\_\_\_\_\_

A) salvage value expense   
 B) net working capital expense  
 C) sunk cost  
 D) opportunity cost  
 E) erosion cost

**4)** A decrease in a firm’s current cash flows resulting from the implementation of a new project is referred to as:

4) \_\_\_\_\_\_

A) salvage value expenses.   
 B) net working capital expenses.  
 C) sunk costs.  
 D) opportunity costs.  
 E) erosion costs.

**5)** When identifying all the incremental cash flows related to a proposed project, and analyst must:

5) \_\_\_\_\_\_

A) isolate the total sunk costs so they can be evaluated to determine if they will add value to the firm.   
 B) eliminate any cost which has previously been incurred so that it can be omitted from the analysis of the project.  
 C) make each project appear as profitable as possible for the firm.  
 D) include both the proposed and the current operations of a firm in the analysis of the project.  
 E) identify any and all changes in the cash flows of the firm for the past year so they can be included in the analysis.

**6)** Sunk costs include any costs that:

6) \_\_\_\_\_\_

A) will change if a project is undertaken.   
 B) will be incurred if a project is accepted.  
 C) have previously been incurred and cannot be changed.  
 D) will be paid to a third party and cannot be refunded for any reason whatsoever.  
 E) will occur if a project is accepted and once incurred, cannot be recouped.

**7)** Assume you spent $800 last week repairing your car. Now a new problem is occurring and you are trying to decide whether to fix the car or trade it in for a newer model. In analyzing the situation, the $800 repair expense is a(n) \_\_\_\_\_\_\_\_ cost.

7) \_\_\_\_\_\_

A) opportunity   
 B) fixed  
 C) incremental  
 D) sunk  
 E) relevant

**8)** Erosion can be explained as the:

8) \_\_\_\_\_\_

A) additional income generated from the sales of a newly added product.   
 B) loss of current sales due to a new project being implemented.  
 C) loss of revenue due to employee theft.  
 D) loss of revenue due to customer theft.  
 E) decrease in expected annual revenues as a new product ages.

**9)** Of the following choices, which one is an example of erosion and should be included in a capital project analysis?

9) \_\_\_\_\_\_

A) The anticipated loss of current sales when a new product is launched.   
 B) The expected decline in sales as the market for a product becomes saturated.  
 C) The reduction in sales that occurs when a competitor introduces a new product.  
 D) The sudden loss of sales due to a major employer in your community implementing massive layoffs.  
 E) The reduction in sales price that will most likely be required to sell inventory that has aged.

**10)** \_\_\_\_\_\_\_\_ should be excluded from the analysis of a capital project.

10) \_\_\_\_\_\_

A) Erosion costs   
 B) Incremental fixed costs  
 C) Incremental variable costs  
 D) Sunk costs  
 E) Opportunity costs

**11)** The cash flows of a project should:

11) \_\_\_\_\_\_

A) be computed on a pretax basis.   
 B) include all sunk costs and opportunity costs.  
 C) include all incremental and opportunity costs.  
 D) be applied to the year when the related expense or income is recognized by GAAP.  
 E) include all financing costs related to new debt acquired to finance the project.

**12)** All of the following are anticipated effects of a proposed project. Which of them should be considered when computing the cash flow for the final year of the project?

12) \_\_\_\_\_\_

A) Operating cash flow and salvage values only   
 B) Salvage values and net working capital recovery only  
 C) Operating cash flow, net working capital recovery, salvage values  
 D) Net working capital recovery and operating cash flow only  
 E) Operating cash flow only

**13)** Changes in net working capital:

13) \_\_\_\_\_\_

A) can affect the cash flows of a project every year of the project's life.   
 B) only affect the initial cash flows of a project.  
 C) are included in project analysis only if they represent cash outflows.  
 D) are generally excluded from project analysis due to their irrelevance to the total project.  
 E) can only affect the initial and the final cash flows of a project.

**14)** The net working capital of a firm will decrease if there is:

14) \_\_\_\_\_\_

A) a decrease in accounts payable.   
 B) an increase in inventory.  
 C) a decrease in accounts receivable.  
 D) an increase in the checking account balance.  
 E) a decrease in fixed assets.

**15)** Net working capital:

15) \_\_\_\_\_\_

A) can be ignored in project analysis because any expenditure is normally recouped by the end of the project.   
 B) requirements generally, but not always, create a cash inflow at the beginning of a project.  
 C) expenditures commonly occur at the end of a project.  
 D) is frequently affected by the additional sales generated by a new project.  
 E) is the only expenditure where at least a partial recovery can be made at the end of a project.

**16)** A company that opts to forego bonus depreciation and instead uses the MACRS system of depreciation:

16) \_\_\_\_\_\_

A) will have equal depreciation costs for each year of an asset’s life.   
 B) will expense the largest percentage of the cost during an asset’s first year of life.  
 C) can depreciate the cost of land, if it so desires.  
 D) will fully depreciate the entire cost of an asset over the asset’s class life.  
 E) cannot expense any of the cost of a new asset during the first year of the asset’s life.

**17)** Champion Toys just purchased some MACRS 5-year property at a cost of $230,000. The MACRS rates are 20 percent, 32 percent, 19.2 percent, 11.52 percent, 11.52 percent, and 5.76 percent for Years 1 to 6, respectively. Assuming the firm foregoes all bonus depreciation, the book value of the asset as of the end of Year 2 can be calculated as:

17) \_\_\_\_\_\_

A) $230,000(1 − .20 − .32).   
 B) $230,000([1 − (.20)(.32)].  
 C) $230,000(1 − .20)(1 − .32).  
 D) $230,000/(1 − .20 − .32).  
 E) $230,000(.20)(.32).

**18)** Reema Remodels just purchased some equipment at a cost of $650,000. What is the proper methodology for computing the depreciation expense for Year 3 if the equipment is classified as 5-year property for MACRS? The MACRS rates are 20 percent, 32 percent, 19.2 percent, 11.52 percent, 11.52 percent, and 5.76 percent for Years 1 to 6, respectively. Ignore bonus depreciation.

18) \_\_\_\_\_\_

A) $650,000(1 − .20)(1 − .32)(1 − .192)   
 B) $650,000(1 − .20)(1 − .32)  
 C) $650,000(1 − .20)(1 − .32)(.192)  
 D) $650,000(1 − .192)  
 E) $650,000(.192)

**19)** The book value of an asset is primarily used to compute the:

19) \_\_\_\_\_\_

A) annual depreciation tax shield.   
 B) amount of cash received from the sale of the asset.  
 C) amount of tax saved annually due to the depreciation expense.  
 D) amount of tax due on the sale of that asset.  
 E) change in depreciation needed to reflect the market value of the asset.

**20)** The salvage value of an asset creates an aftertax cash flow in an amount equal to the sales price:

20) \_\_\_\_\_\_

A) of the asset.   
 B) minus the remaining book value.  
 C) minus [Tax rate × (Sales price − Book value)].  
 D) minus [Tax rate × (Book value − Sales price)].  
 E) plus the remaining book value.

**21)** The pretax salvage value of an asset is equal to the:

21) \_\_\_\_\_\_

A) book value if straight-line depreciation is used.   
 B) book value if MACRS depreciation is used.  
 C) market value minus the book value.  
 D) book value minus the market value.  
 E) market value.

**22)** Which depreciation method currently permitted under U.S. tax law provides the fastest means of depreciating an asset?

22) \_\_\_\_\_\_

A) MACRS depreciation   
 B) Bonus depreciation  
 C) Straight-line depreciation  
 D) Sum-of-years digits depreciation  
 E) Partial bonus depreciation combined with MACRS

**23)** For a tax-paying firm, the net present value of a project will increase when:

23) \_\_\_\_\_\_

A) the initial net working capital requirement increases.   
 B) depreciation is decreased during the early years of a project’s life.  
 C) the life of the fixed assets used by that project is increased.  
 D) the operating cash flows increase.  
 E) the tax rate increases.

**24)** When a project’s \_\_\_\_\_\_\_\_, its operating cash flow will increase.

24) \_\_\_\_\_\_

A) depreciation expense increases   
 B) sales projections are lowered  
 C) interest expense is lowered  
 D) net working capital requirement increases  
 E) earnings before interest and taxes decreases

**25)** The increase in cash flow generated as a result of a firm’s tax-deductible depreciation expense is called the:

25) \_\_\_\_\_\_

A) aftertax depreciation savings.   
 B) depreciable basis.  
 C) depreciation tax shield.  
 D) operating cash flow.  
 E) aftertax salvage value.

**26)** Assume a firm has no interest expense or extraordinary items. Given this, the operating cash flow can be computed as:

26) \_\_\_\_\_\_

A) EBIT − Taxes.   
 B) EBIT(1 − Tax rate) + Depreciation(Tax rate).  
 C) (Sales − Costs)(1 − Tax rate).  
 D) EBIT − Depreciation + Taxes.  
 E) Net income + Depreciation.

**27)** The bottom-up approach to computing the operating cash flow applies only when:

27) \_\_\_\_\_\_

A) both the depreciation expense and the interest expense are equal to zero.   
 B) the interest expense is equal to zero.  
 C) the project is a cost-cutting project.  
 D) no fixed assets are required for the project.  
 E) taxes are ignored and the interest expense is equal to zero.

**28)** The top-down approach to computing the operating cash flow:

28) \_\_\_\_\_\_

A) ignores all noncash items.   
 B) applies only if a project produces sales.  
 C) can only be used if the entire cash flows of a firm are included.  
 D) is equal to: Sales − Costs − Taxes + Depreciation.  
 E) includes the interest expense related to a project.

**29)** For a profitable firm, an increase in \_\_\_\_\_\_\_\_ expense will increase operating cash flow.

29) \_\_\_\_\_\_

A) payroll   
 B) office rent  
 C) building maintenance  
 D) depreciation  
 E) equipment rental

**30)** The term “tax shield” refers to a reduction in taxes created by:

30) \_\_\_\_\_\_

A) a reduction in sales.   
 B) an increase in interest expense.  
 C) noncash expenses.  
 D) a project’s incremental expenses.  
 E) opportunity costs.

**31)** A project which is designed to improve the manufacturing efficiency of a firm but will generate no additional sales revenue is referred to as a(n) \_\_\_\_\_ project.

31) \_\_\_\_\_\_

A) sunk cost   
 B) opportunity  
 C) cost-cutting  
 D) revenue-cutting  
 E) revenue-generating

**32)** The annual annuity stream of payments with the same present value as a project’s costs is called the project’s \_\_\_\_\_ cost.

32) \_\_\_\_\_\_

A) incremental   
 B) sunk  
 C) opportunity  
 D) erosion  
 E) equivalent annual

**33)** Gorch Moving is comparing machines to determine which one to purchase. The machines sell for differing prices, have differing operating costs, differing machine lives, and will be replaced when worn out. These machines should be compared using:

33) \_\_\_\_\_\_

A) net present value only.   
 B) both net present value and the internal rate of return.  
 C) their equivalent annual costs.  
 D) the depreciation tax shield approach.  
 E) the replacement cost approach.

**34)** The pro forma income statement for a cost reduction project:

34) \_\_\_\_\_\_

A) will reflect a reduction in the sales of the firm.   
 B) will generally reflect no incremental sales.  
 C) has to be prepared reflecting the total sales and expenses of the entire firm.  
 D) cannot be prepared due to the lack of any project related sales.  
 E) will always reflect a negative project operating cash flow.

**35)** The equivalent annual cost method is most useful in determining:

35) \_\_\_\_\_\_

A) the annual operating cost of an idle machine that is currently owned by a firm.   
 B) the tax shield benefits of depreciation given the purchase of new assets for a project.  
 C) operating cash flows for cost-cutting projects of equal duration.  
 D) which one of two machines to acquire given equal machine lives but unequal machine costs.  
 E) which one of two machines to purchase when the machines are mutually exclusive, have differing lives, and will be replaced.

**36)** Interest rates that have been adjusted for the effects of inflation are called \_\_\_\_\_ rates.

36) \_\_\_\_\_\_

A) real   
 B) nominal  
 C) effective  
 D) stripped  
 E) coupon

**37)** The increase in buying power you experience as a result of owning an investment is referred to as the \_\_\_\_\_ rate of return.

37) \_\_\_\_\_\_

A) inflated   
 B) realized  
 C) nominal  
 D) real  
 E) risk-free

**38)** Four years ago, Rojas purchased a parcel of land for $760,000 and then spent an additional $120,000 to install access to water and electricity. The land was recently appraised at $825,000. Rojas now wants to build a restaurant on the site. The cost to build the restaurant is estimated at $1.4 million. What amount should be used as the initial cash outflow for this building project?

38) \_\_\_\_\_\_

A) $3,105,000   
 B) $2,225,000  
 C) $2,280,000  
 D) $1,400,000  
 E) $2,345,000

**39)** Colletto’s purchased a lot seven years ago at a cost of $412,000. At that time, the firm spent $378,000 to build a small retail store on the site. The most recent appraisal on the property placed a value of $522,000 on the lot and building combined. Colletto’s now wants to tear down the store and replace it with an office building at an estimated cost of $3.1 million. What amount should be used as the initial cash outflow for the new project?

39) \_\_\_\_\_\_

A) $4,034,000   
 B) $4,412,000  
 C) $3,890,000  
 D) $3,622,000  
 E) $3,100,000

**40)** Mougia’s currently produces boat sails and is considering expanding its operations to include awnings. The expansion would require the use of land the firm purchased three years ago at a cost of $142,000 that is currently valued at $137,500. The expansion could use some equipment that is currently sitting idle if $6,700 of modifications were made to it. The equipment originally cost $139,500 six years ago, has a current book value of $24,700, and a current market value of $39,000. Other capital purchases costing $780,000 will also be required. What is the amount of the initial cash outflow for this expansion project?

40) \_\_\_\_\_\_

A) $953,400   
 B) $962,300  
 C) $948,900  
 D) $927,800  
 E) $963,200

**41)** The Boat Works currently produces boat sails and is considering expanding its operations to include awnings. The expansion would require the use of land the firm purchased three years ago at a cost of $197,000 that is currently valued at $209,500. The expansion could use some equipment that is currently sitting idle if $7,500 of modifications were made to it. The equipment originally cost $387,500 five years ago, has a current book value of $132,700, and a current market value of $139,000. Other capital purchases costing $520,000 will also be required. What is the value of the opportunity costs that should be included in the initial cash outflow for the expansion project?

41) \_\_\_\_\_\_

A) $425,000   
 B) $485,000  
 C) $329,700  
 D) $348,500  
 E) $537,200

**42)** Cush currently sells 14,800 pairs of shoes annually at an average price of $59 a pair. It is considering adding a lower-priced line of shoes that will be priced at $39 a pair. The company estimates it can sell 6,000 pairs of the lower-priced shoes annually but will sell 3,500 less pairs of the higher-priced shoes each year by doing so. What annual sales revenue should be used when evaluating the addition of the lower-priced shoes?

42) \_\_\_\_\_\_

A) $27,500   
 B) $24,000  
 C) $31,300  
 D) $789,100  
 E) $900,700

**43)** Foamsoft currently sells 16,850 pairs of shoes annually at an average price of $79 a pair. It is considering adding a new line of shoes that would sell for $49 a pair. The company estimates it can sell 5,000 pairs of the lower-priced shoes annually but will sell 1,250 less pairs of the higher-priced shoes each year by doing so. What is the estimated value of the annual erosion cost that should be charged to the lower-priced shoe project?

43) \_\_\_\_\_\_

A) $138,750   
 B) $146,250  
 C) $98,750  
 D) $52,000  
 E) $123,240

**44)** Camila purchased a house for $89,000, spent $56,000 upgrading it, and recently had it appraised at $212,900. The house is being rented to a family for $1,200 per month, the maintenance expenses average $200 per month, and the property taxes are $4,800 per year. If she sells the house she will incur $20,000 in expenses. She is considering converting the house into professional office space. What opportunity cost, if any, should she assign to this property if she has been renting it for the past two years?

44) \_\_\_\_\_\_

A) $178,500   
 B) $120,000  
 C) $185,000  
 D) $192,900  
 E) $232,900

**45)** Cahill Motor Home Sales currently sells 110 Class A motor homes, 220 Class C motor homes, and 280 pop-up trailers each year. They are considering adding a mid-range camper with expected annual sales of 300 units. However, if the new camper is added, Class A sales will decline to 85 units and the Class C camper sales will decline to 200 units. The sales of pop-ups will not be affected. Class A motor homes sell for an average of $140,000 each. Class C homes are priced at $59,500, and the pop-ups sell for $5,000 each. The new mid-range camper will sell for $42,900. What is the annual erosion cost of adding the mid-range camper?

45) \_\_\_\_\_\_

A) $5,425,000   
 B) $4,690,000  
 C) $5,375,000  
 D) $6,315,000  
 E) $7,875,000

**46)** Challa Corporation just purchased $40,000 of fixed assets that are classified as 5-year MACRS property. The MACRS rates are 20 percent, 32 percent, 19.2 percent, 11.52 percent, 11.52 percent, and 5.76 percent for Years 1 to 6, respectively. What is the amount of the depreciation expense for the fourth year if the firm applies the new bonus method of depreciation?

46) \_\_\_\_\_\_

A) $2,304   
 B) $7,680  
 C) $4,608  
 D) $0  
 E) $8,000

**47)** Estafania just purchased $67,600 of equipment that is classified as 5-year MACRS property. The MACRS rates are 20 percent, 32 percent, 19.2 percent, 11.52 percent, 11.52 percent, and 5.76 percent for Years 1 to 6, respectively. What will be the book value of this equipment at the end of four years if she ignores bonus depreciation?

47) \_\_\_\_\_\_

A) $11,681.28   
 B) $18,280.20  
 C) $17,040.00  
 D) $19,468.80  
 E) $22,672.00

**48)** Exposures Photographic just purchased $945,000 of fixed assets that are classified as 5-year MACRS property. The MACRS rates are .2000, .3200, .1920, .1152, .1152, and .0576 for Years 1 to 4, respectively. What will be the amount of the depreciation expense for Year 3? Ignore bonus depreciation.

48) \_\_\_\_\_\_

A) $139,955   
 B) $108,864  
 C) $165,281  
 D) $84,389  
 E) $181,440

**49)** The Galley purchased some 3-year MACRS property two years ago at a cost of $19,800. The MACRS rates are 33.33 percent, 44.44 percent, 14.82 percent, and 7.41 percent. The firm no longer uses this property so is selling it today at a price of $13,500. What is the amount of the aftertax profit on the sale? Assume the firm applies bonus depreciation and has a tax rate of 21 percent.

49) \_\_\_\_\_\_

A) $9,140.48   
 B) $10,665.00  
 C) $8,295.00  
 D) $7,187.78  
 E) $10,702.40

**50)** Three years ago, you purchased some 5-year MACRS equipment at a cost of $180,000. The MACRS rates are 20 percent, 32 percent, 19.2 percent, 11.52 percent, 11.52 percent, and 5.76 percent for Years 1 to 6, respectively. You sold the equipment today for $89,500. Which of these statements is correct if your tax rate is 21 percent and you ignore bonus depreciation?

50) \_\_\_\_\_\_

A) The taxable amount of the sale is $51,840.   
 B) The book value today is $86,400.  
 C) The book value today is $148,896.  
 D) The tax due on the sale is $7,908.60.  
 E) The tax refund from the sale is $2,091.40.

**51)** Su Sweets purchased $145,000 of fixed assets two years ago that are classified as 5-year MACRS property. The MACRS rates are 20 percent, 32 percent, 19.2 percent, 11.52 percent, 11.52 percent, and 5.76 percent for Years 1 to 6, respectively. The tax rate is 22 percent. If the assets are sold today for $91,500, what will be the aftertax cash flow from the sale? Ignore bonus depreciation.

51) \_\_\_\_\_\_

A) $20,130   
 B) $15,312  
 C) $31,900  
 D) $17,072  
 E) $86,682

**52)** If Rosinki Fabricators purchases $618,000 of new equipment, they can lower annual operating costs by $265,000. The equipment will be depreciated straight-line to a zero book value over its 3-year life. Ignore bonus depreciation. At the end of the three years, the equipment will be sold for an estimated $60,000. The equipment will require the company to hold an extra $23,000 of inventory over the 3-year period. What is the NPV if the discount rate is 14 percent and the tax rate is 21 percent?

52) \_\_\_\_\_\_

A) −$2,646.00   
 B) −$7,014.54  
 C) −$12,593.78  
 D) $3,106.54  
 E) $6,884.40

**53)** Winslow Motors purchased $225,000 of MACRS 5-year property. The MACRS rates are 20 percent, 32 percent, 19.2 percent, 11.52 percent, 11.52 percent, and 5.76 percent for Years 1 to 6, respectively. The tax rate is 21 percent. If the firm sells the asset after four years for $10,000, what will be the aftertax cash flow from the sale if the firm applies bonus depreciation?

53) \_\_\_\_\_\_

A) $6,488.85   
 B) $8,880.20  
 C) $7,900.00  
 D) $7,770.40  
 E) $11,006.40

**54)** A project is expected to create operating cash flows of $26,500 a year for four years. The fixed assets required for the project cost $62,000 and will be worthless at the end of the project. An additional $3,000 of net working capital will be required throughout the life of the project. What is the project's net present value if the required rate of return is 12 percent?

54) \_\_\_\_\_\_

A) $19,208.11   
 B) $14,028.18  
 C) $15,306.09  
 D) $17,396.31  
 E) $21,954.17

**55)** A project is expected to create operating cash flows of $73,000 per year for eight years. The fixed assets required for the project cost $108,000. It will cost an estimated $60,000 after tax to dispose of the fixed assets at the end of the project. What is the project’s net present value if the required rate of return is 12.5 percent?

55) \_\_\_\_\_\_

A) −$487,774   
 B) $225,005  
 C) $333,005  
 D) $271,774  
 E) −$333,005

**56)** A project is expected to create operating cash flows of $42,000 per year for five years. The fixed assets required for the project cost $98,000. It will cost an estimated $54,000 after tax to dispose of the fixed assets at the end of the project. What is the project’s net present value if the required rate of return is 13 percent?

56) \_\_\_\_\_\_

A) −$275,033   
 B) $118,415  
 C) $20,415  
 D) $79,033  
 E) $23,787

**57)** Assume a project will increase inventory by $61,000, accounts payable by $28,000, and accounts receivable by $36,000. What is the initial net working capital requirement for this project?

57) \_\_\_\_\_\_

A) $53,000   
 B) $69,000  
 C) $59,000  
 D) $97,000  
 E) $125,000

**58)** Efron Supply is considering a project which will require additional inventory of $115,000, will decrease accounts payable by $12,000, and will increase accounts receivable by $22,000. What is the initial net working capital requirement for this project?

58) \_\_\_\_\_\_

A) $149,000   
 B) $173,000  
 C) $125,000  
 D) $95,000  
 E) $81,000

**59)** Chen Sports needs to maintain 15 percent of its sales in net working capital. The firm is considering a 3-year project which will increase sales from their current level of $110,000 to $125,000 the first year and to $135,000 per year for the following two years. When analyzing the project, what amount should be included for net working capital for the last year if the net working capital returns to its original level at that time?

59) \_\_\_\_\_\_

A) $20,250   
 B) $7,000  
 C) $13,200  
 D) $3,750  
 E) $17,400

**60)** Bloom Corporation needs to maintain 8 percent of its sales in net working capital. The firm is considering a 5-year project which will increase sales from their current level of $110,000 to $146,000, $152,000, $158,000, $164,000, and $155,000 for Years 1 to 5 of the project, respectively. What amount should be included in the project analysis cash flows for net working capital for Year 3 of the project?

60) \_\_\_\_\_\_

A) −$12,640   
 B) −$480  
 C) $0  
 D) $480  
 E) $12,640

**61)** Hannigan Home Theater is expanding its product offerings which includes increasing the floor inventory by $150,000, increasing accounts receivable by $35,000, and increasing its debt to suppliers by $75,000. The company will also spend $200,000 for a building contractor to expand the size of the showroom. What is the amount of the project's initial cash flow?

61) \_\_\_\_\_\_

A) −$240,000   
 B) −$310,000  
 C) −$160,000  
 D) −$295,000  
 E) −$175,000

**62)** Izquierdo, Incorporated, is considering a project with a life of 4 years that will produce annual operating cash flows of $123,000. During the life of the project, inventory will increase by $8,500, accounts receivable will increase by $11,000, and accounts payable will increase by $4,200. The project requires the purchase of equipment at an initial cost of $310,000 that will be depreciated straight-line to a zero book value over the life of the project. Ignore bonus depreciation. The equipment will be salvaged at the end of the project creating an aftertax cash inflow of $36,000. At the end of the project, net working capital will return to its normal level. What is the net present value of this project given a required return of 14.1 percent?

62) \_\_\_\_\_\_

A) $67,577   
 B) $62,621  
 C) $56,680  
 D) $59,177  
 E) $97,636

**63)** Prasla Auto Detailing is evaluating a project with a life of 6 years that will produce annual operating cash flows of $134,000. During the life of the project, inventory will be increase by $7,000, accounts receivable will increase by $11,000, and accounts payable will increase by $3,600. The project requires the purchase of equipment at an initial cost of $298,000 that will be depreciated straight-line to a zero book value over the life of the project. Ignore bonus depreciation. The equipment will be salvaged at the end of the project creating an aftertax cash inflow of $37,000. At the end of the project, net working capital will return to its normal level. What is the net present value of this project given a required return of 15.3 percent?

63) \_\_\_\_\_\_

A) $211,179   
 B) $208,391  
 C) $251,243  
 D) $212,527  
 E) $215,591

**64)** A project will produce an operating cash flow of $7,300 per year for three years. The initial investment for fixed assets will be $11,600, which will be depreciated straight-line to zero over the asset's 4-year life. Ignore bonus depreciation. The project will require an initial $500 in net working capital plus an additional $500 every year with all net working capital levels restored to their original levels when the project ends. The fixed assets can be sold for an estimated $2,500 at the end of the project, the combined tax rate is 23 percent, and the required rate of return is 12 percent. What is the net present value of the project?

64) \_\_\_\_\_\_

A) $7,500.95   
 B) $9,896.87  
 C) $7,072.72  
 D) $6,353.41  
 E) $8,398.29

**65)** Assume a proposed project under consideration by the James River Company requires $28,900 in fixed assets. The firm plans to ignore bonus depreciation and instead apply straight-line depreciation to zero over the asset’s 6-year life. An aftertax salvage value of $5,400 is expected. The project will produce an annual operating cash flow of $7,300 and will require net working capital of $500 initially plus an additional $500 in Year 3. Net working capital will be restored to its original level when the project ends at the end of Year 6. The tax rate is 21 percent and the required rate of return is 14 percent. What is the net present value of this project?

65) \_\_\_\_\_\_

A) $1,565.54   
 B) $1,196.87  
 C) $1,072.72  
 D) $1,337.75  
 E) $1,398.29

**66)** Loop Enterprises is considering a new project that will require $325,000 for fixed assets, $160,000 for inventory, and $35,000 for accounts receivable. Short-term debt is expected to increase by $100,000. The project has a life of 5 years. The fixed assets will be depreciated straight-line to a zero book value over the life of the project. Ignore bonus depreciation. At the end of the project, the fixed assets can be sold for 25 percent of their original cost and the net working capital will return to its original level. The project is expected to generate annual sales of $554,000 with costs of $430,000. The tax rate is 21 percent and the required rate of return is 15 percent. What is the net present value of this project?

66) \_\_\_\_\_\_

A) $32,026.45   
 B) $33,278.35  
 C) $34,138.25  
 D) $32,318.29  
 E) $36,202.48

**67)** Capable Systems is considering a project with a life of 4 years that will require $164,800 for fixed assets and $42,400 for net working capital. The fixed assets will be depreciated using the Year 2018 bonus depreciation method. At the end of the project, the fixed assets can be sold for $37,500 cash and the net working capital will return to its original level. The project is expected to generate annual sales of $195,000 and costs of $117,500. The tax rate is 24 percent and the required rate of return is 13 percent. What is the project's net present value?

67) \_\_\_\_\_\_

A) $48,909.09   
 B) $46,482.43  
 C) $42,316.67  
 D) $56,500.00  
 E) $59,488.87

**68)** Reed Music is considering a project with a life of 3 years that will require $289,400 for fixed assets, $36,700 for inventory, and $27,800 for accounts receivable. Short-term debt is expected to increase by $16,500. The fixed assets will be depreciated straight-line to a zero book value over 5 years. Ignore bonus depreciation. At the end of the project, the fixed assets can be sold for 20 percent of their original cost and the net working capital will return to its original level. The project is expected to generate annual sales of $275,000 and costs of $198,000. The tax rate is 21 percent and the required rate of return is 16 percent. What is the amount of the cash flow in the project’s final year?

68) \_\_\_\_\_\_

A) $208,433.33   
 B) $197,908.18  
 C) $191,019.60  
 D) $160,087.09  
 E) $181,250.24

**69)** Freely Travel is considering a project with a life of 5 years that will require the purchase of $1.4 million in new 5-year MACRS equipment. The MACRS rates are 20 percent, 32 percent, 19.2 percent, 11.52 percent, 11.52 percent, and 5.76 percent for Years 1 to 6, respectively. Ignore bonus depreciation. The firm desires a minimum 14 percent rate of return and the tax rate is 22 percent. The equipment can be sold at the end of the project for an estimated $225,000. What is the amount of the aftertax salvage value?

69) \_\_\_\_\_\_

A) $187,600.00   
 B) $162,418.54  
 C) $195,322.15  
 D) $184,238.97  
 E) $193,240.80

**70)** Schroeder Electronics is considering a project which will require the purchase of $5.68 million in new equipment that will be depreciated straight-line to a zero book value over the 5-year life of the project. Ignore bonus depreciation. The firm requires a rate of return of 12 percent and the tax rate is 21 percent. What is the value of the depreciation tax shield in Year 5 of the project?

70) \_\_\_\_\_\_

A) $225,608   
 B) $228,406  
 C) $334,800  
 D) $238,560  
 E) $0

**71)** Woodard Pools is evaluating a project which will increase annual sales by $50,000 and costs by $30,000. The project has an initial asset cost of $150,000 that will be depreciated straight-line to a zero book value over the 10-year life of the project. Ignore bonus depreciation. The applicable tax rate is 25 percent. What is the annual operating cash flow for this project?

71) \_\_\_\_\_\_

A) $19,250   
 B) $15,500  
 C) $21,350  
 D) $17,900  
 E) $18,750

**72)** Velasco Land Company is considering a project which will require the purchase of $1.4 million in new 5-Year MACRS equipment. The MACRS rates are 20 percent, 32 percent, 19.2 percent, 11.52 percent, 11.52 percent, and 5.76 percent for Years 1 to 6, respectively. Ignore bonus depreciation. The firm desires a minimal 14 percent rate of return and has a combined tax rate of 25 percent. What is the value of the depreciation tax shield in Year 2 of the project?

72) \_\_\_\_\_\_

A) $107,500   
 B) $90,400  
 C) $89,600  
 D) $123,416  
 E) $112,000

**73)** Ventana Windows is looking at a project that will require $80,000 in fixed assets and another $20,000 in net working capital. The project is expected to produce annual sales of $110,000 with associated costs of $70,000. The project has a life of 4 years. The company ignores bonus depreciation and instead uses straight-line depreciation to a zero book value over the life of the project. The tax rate is 21 percent. What is the annual operating cash flow for this project?

73) \_\_\_\_\_\_

A) $31,600   
 B) $43,200  
 C) $27,000  
 D) $35,800  
 E) $40,000

**74)** For the current year, Skate and Snow has sales of $760,000 and a profit margin of 5 percent. The annual depreciation expense is $80,000. What is the amount of the annual operating cash flow if the company has no long-term debt?

74) \_\_\_\_\_\_

A) $34,000   
 B) $86,400  
 C) $118,000  
 D) $120,400  
 E) $123,900

**75)** Windows by Addie has annual sales of $760,000 and a profit margin of 8 percent. The annual depreciation expense is $50,000. What is the amount of the annual operating cash flow if the company has no long-term debt?

75) \_\_\_\_\_\_

A) $50,000   
 B) $60,800  
 C) $110,800  
 D) $810,000  
 E) $930,000

**76)** For this year, Katrina’s Kennels has sales of $439,000, depreciation of $32,000, and net working capital of $56,000. The firm has a tax rate of 23 percent and a profit margin of 6 percent. The firm has no interest expense. What is the amount of the operating cash flow?

76) \_\_\_\_\_\_

A) $49,384   
 B) $52,616  
 C) $54,980  
 D) $58,340  
 E) $114,340

**77)** For next year, Prakash Partners has projected sales of $375,000, costs of $146,000, depreciation of $17,600, interest expense of $2,090, and taxes of $48,141. What is the amount of the projected operating cash flow?

77) \_\_\_\_\_\_

A) $180,859   
 B) $163,259  
 C) $178,769  
 D) $180,378  
 E) $176,811

**78)** For this year, Wilbert’s Cakes has costs of $187,400, depreciation of $32,700, interest expense of $14,800, dividends paid of $5,600, taxes of $17,600, and an operating cash flow of $101,900. What is the sales amount?

78) \_\_\_\_\_\_

A) $264,200   
 B) $269,800  
 C) $306,900  
 D) $322,100  
 E) $324,200

**79)** Welcome Inn is considering a project that will produce sales of $16,000, increase cash expenses by $10,000, increase taxes by $950, and increase depreciation by $1,500 for each year of the project’s 9-year life. What is the amount of the annual operating cash flow using the top-down approach?

79) \_\_\_\_\_\_

A) $3,550   
 B) $5,050  
 C) $6,100  
 D) $7,550  
 E) $4,550

**80)** Klain Running is considering a project that will not produce any sales but will decrease annual cash expenses by $12,000. If the project is implemented, annual taxes will increase from $23,000 to $25,205, and depreciation will increase from $4,000 to $5,500 per year. What is the amount of the annual operating cash flow using the top-down approach?

80) \_\_\_\_\_\_

A) $5,025   
 B) $9,795  
 C) $5,500  
 D) $12,000  
 E) $14,205

**81)** Wilson Feeds is considering a project with a life of one year that will produce sales of $6,000 and increase cash expenses by $2,500. If the project is implemented, taxes will increase by $700. The additional depreciation expense will be $200 and interest expense will increase by $100. An initial cash outlay of $200 is required for net working capital. What is the amount of the operating cash flow using the top-down approach?

81) \_\_\_\_\_\_

A) $2,200   
 B) $1,500  
 C) $2,800  
 D) $3,500  
 E) $4,200

**82)** A project will increase annual sales by $60,000 and annual cash expenses by $51,000. The project will cost $40,000 and will be depreciated using straight-line depreciation to a zero book value over the 4-year life of the project. Ignore bonus depreciation. The company has a marginal tax rate of 23 percent. What is the annual operating cash flow using the tax shield approach?

82) \_\_\_\_\_\_

A) $5,850   
 B) $8,650  
 C) $9,230  
 D) $9,770  
 E) $10,350

**83)** A new project with a life of four years will increase sales by $140,000 and cash expenses by $95,000 annually. The project will cost $100,000 and will be depreciated using the bonus depreciation method. The company has a marginal tax rate of 21 percent. What is the value of the depreciation tax shield in Year 2?

83) \_\_\_\_\_\_

A) $0   
 B) $5,250  
 C) $2,625  
 D) $3,375  
 E) $6,500

**84)** Matty’s Place is considering the installation of a new computer system that will cut annual operating costs by $12,000. The system will cost $42,000 to purchase and install. This system is expected to have a life of 5 years and will be depreciated to zero using straight-line depreciation. Ignore bonus depreciation. What is the amount of the earnings before interest and taxes for each year of this project if the tax rate is 21 percent?

84) \_\_\_\_\_\_

A) −$20,400   
 B) $5,400  
 C) $3,600  
 D) $12,000  
 E) $8,400

**85)** Patel & Reed is considering replacing the equipment it uses. The equipment would cost $1.4 million and lower manufacturing costs by an estimated $215,000 per year. The equipment will be depreciated over 8 years using straight-line depreciation to a book value of zero. Ignore bonus depreciation. The required rate of return is 13 percent and the tax rate is 21 percent. The equipment will be worthless after 8 years. What is the annual operating cash flow from this proposed project?

85) \_\_\_\_\_\_

A) $141,900   
 B) $206,600  
 C) $232,400  
 D) $160,000  
 E) $40,000

**86)** The initial cost of one customized machine is $25,000 with an annual operating cost of $5,000, and a life of 6 years. The machine will be worthless and replaced at the end of its life. What is the equivalent annual cost of this machine if the required rate of return is 12 percent and we ignore taxes?

86) \_\_\_\_\_\_

A) $4,443   
 B) $11,081  
 C) $7,593  
 D) $6,081  
 E) $9,167

**87)** Jackson Products uses packing machines to prepare its products for shipping. One machine costs $397,500 and lasts 5 years before it needs replaced. The machine will be worthless after the 5 years. The annual aftertax operating cost per machine is $38,400. What is the equivalent annual cost of one machine if the required rate of return is 16 percent?

87) \_\_\_\_\_\_

A) $148,556.67   
 B) $159,800.23  
 C) $156,004.12  
 D) $143,006.15  
 E) $154,224.08

**88)** Starboard is analyzing two machines to determine which one it should purchase. The company requires a rate of return of 14.6 percent and uses straight-line depreciation to a zero book value over a machine’s life. Ignore bonus depreciation and taxes. Machine A has a cost of $318,000, annual operating costs of $8,700, and a life of 3 years. Machine B costs $247,000, has annual operating costs of $9,300, and a life of 2 years. Whichever machine is purchased will be replaced at the end of its useful life. Which machine should Starboard purchase and why?

88) \_\_\_\_\_\_

A) Machine A; because it will save the company about $13,406 per year   
 B) Machine A; because it will save the company about $18,100 per year  
 C) Machine B; because it will save the company about $16,510 per year  
 D) Machine B; because it will save the company about $11,609 per year  
 E) Machine A; because it costs $154,224.08

**89)** Water Resources is considering a new project that will require $118,000 of fixed assets and net working capital of $16,000. The fixed assets will be depreciated on a straight-line basis to a zero salvage value over three years. Ignore bonus depreciation. This project is expected to produce an operating cash flow of $45,000 the first year with that amount decreasing by 5 percent annually for two years before the project is shut down. The fixed assets can be sold for $55,000 at the end of the project and all net working capital will be recovered. What is the net present value of this project at a discount rate of 11.5 percent and a tax rate of 23 percent?

89) \_\_\_\_\_\_

A) $3,209.17   
 B) $15,311.09  
 C) $12,136.54  
 D) −$3,770.30  
 E) −$5,456.32

**90)** You are working on a bid for a contract. Thus far, you have determined that you will need $156,000 for fixed assets and another $32,000 for net working capital at Time 0. You have also determined that you can recover $68,400 aftertax for the combined fixed assets and net working capital at the end of the 4-year project. What operating cash flow will be required each year for the project to return 16 percent in nominal terms?

90) \_\_\_\_\_\_

A) $46,666.67   
 B) $48,929.74  
 C) $55,200.16  
 D) $53,686.06  
 E) $50,725.50

**91)** You plan to bid on a project with a life of 5 years that will require $68,000 of fixed assets. These assets will be depreciated straight-line to zero over the project’s life. Ignore bonus depreciation. The relevant discount rate is 12.5 percent, the tax rate is 21 percent, there is no interest expense, net working capital is unaffected, and there is no salvage value. What is the minimal required amount of annual sales revenue given annual cash costs of $47,900?

91) \_\_\_\_\_\_

A) $74,515.75   
 B) $82,018.27  
 C) $57,202.19  
 D) $68,459.58  
 E) $52,311.89

**92)** Eduardo is working on a bid for a contract. Thus far, he has determined that he will need $218,000 for fixed assets and another $41,000 for net working capital at Time 0. He has also determined that he can recover $79,900 after tax for the combined fixed assets and net working capital at the end of the 3-year project. What operating cash flow will be required each year for the project to return 14 percent in nominal terms?

92) \_\_\_\_\_\_

A) $116,079.42   
 B) $97,487.79  
 C) $110,220.48  
 D) $88,330.01  
 E) $113,360.69

**93)** In working on a bid project, you have determined that $318,000 of fixed assets are required. These assets will be depreciated straight-line to zero over the 6-year life of the project. Ignore bonus depreciation. The discount rate is 18 percent, the tax rate is 21 percent, and there is no interest expense. In addition, the annual cash costs will be $198,200. After considering all the project’s other cash flows, you have determined that the required operating cash flow is $92,400. What is the required amount of annual sales revenue?

93) \_\_\_\_\_\_

A) $299,811.17   
 B) $302,006.64  
 C) $284,849.92  
 D) $301,073.42  
 E) $279,407.72

**94)** Table Equity invested in a project that returned 14.83 percent during a period when inflation averaged 2.69 percent. What real rate of return did the firm earn on its project?

94) \_\_\_\_\_\_

A) 12.41%   
 B) 11.03%  
 C) 12.99%  
 D) 11.82%  
 E) 11.29%

**95)** Mickles Real Estate earns 10.25 percent on its current investments after adjusting for inflation. Inflation is expected to average 2.8 percent annually over the next 5 years. What discount rate should the firm assign to a project assuming the project has a life of 5 years and the same level of risk as the firm’s current operations?

95) \_\_\_\_\_\_

A) 12.96%   
 B) 13.05%  
 C) 13.14%  
 D) 13.34%  
 E) 12.87%

**96)** Duong Corporation has a new project with projected real cash flows of $12,200, $14,600, and $16,300 for Years 1 to 3, respectively. The nominal discount rate is 15.96 percent and the inflation rate is 4 percent. What is the net present value of the project if the initial cost is $25,000?

96) \_\_\_\_\_\_

A) $9,711.64   
 B) $8,946.48  
 C) $9,508.70  
 D) $9,444.15  
 E) $9,248.74

**97)** Shelton Company purchased a parcel of land six years ago for $861,500. At that time, the firm invested $133,000 in grading the site so that it would be usable. Since the firm wasn't ready to use the site itself at that time, it decided to lease the land for $48,000 a year. The company is now considering building a warehouse on the site as the rental lease is expiring. The current value of the land is $913,000. What value should be included in the initial cost of the warehouse project for the use of this land?

97) \_\_\_\_\_\_

A) $994,500   
 B) $1,046,000  
 C) $861,500  
 D) $0  
 E) $913,000

**98)** You own a house that you rent for $1,375 per month. The maintenance expenses on the house average $255 per month. The house cost $230,000 when you purchased it 4 years ago. A recent appraisal on the house valued it at $252,000. If you sell the house you will incur $20,160 in real estate fees. The annual property taxes are $3,050. You are deciding whether to sell the house or convert it for your own use as a professional office. What value should you place on this house when analyzing the option of using it as a professional office?

98) \_\_\_\_\_\_

A) $252,000   
 B) $231,840  
 C) $230,000  
 D) $227,160  
 E) $0

**99)** Bubbly Waters currently sells 360 Class A spas, 510 Class C spas, and 260 deluxe model spas each year. The firm is considering adding a mid-class spa and expects that if it does, it can sell 435 units per year. However, if the new spa is added, Class A sales are expected to decline to 255 units while the Class C sales are expected to increase to 535. The sales of the deluxe model will not be affected. Class A spas sell for an average of $13,100 each. Class C spas are priced at $6,600 and the deluxe models sell for $17,600 each. The new mid-range spa will sell for $8,600. What annual sales figure should you use in your analysis?

99) \_\_\_\_\_\_

A) $2,530,500   
 B) $5,281,500  
 C) $4,951,500  
 D) $1,210,500  
 E) $3,741,000

**100)** McCanless Company recently purchased an asset for $2,550,000 that will be used in a 3-year project. The asset is in the 3-year MACRS class. The depreciation percentage each year is 33.33 percent, 44.45 percent, 14.81 percent, and 7.41 percent, respectively. What is the amount of depreciation in Year 2?

100) \_\_\_\_\_\_

A) $188,955   
 B) $377,655  
 C) $850,000  
 D) $849,915  
 E) $1,133,475

**101)** A company purchased an asset for $2,900,000 that will be used in a 3-year project. The asset is in the 3-year MACRS class. The depreciation percentage each year is 33.33 percent, 44.45 percent, and 14.81 percent, respectively. What is the book value of the equipment at the end of the project?

101) \_\_\_\_\_\_

A) $214,890   
 B) $1,933,430  
 C) $644,380  
 D) $2,685,110  
 E) $0

**102)** A company is evaluating a new 4-year project. The equipment necessary for the project will cost $3,550,000 and can be sold for $720,000 at the end of the project. The asset is in the 5-year MACRS class. The depreciation percentage each year is 20.00 percent, 32.00 percent, 19.20 percent, 11.52 percent, and 11.52 percent, respectively. The company's tax rate is 35 percent. What is the aftertax salvage value of the equipment?

102) \_\_\_\_\_\_

A) $757,296   
 B) $539,568  
 C) $468,000  
 D) $720,000  
 E) $682,704

**103)** Brummitt Corporation, is evaluating a new 4-year project. The equipment necessary for the project will cost $2,600,000 and can be sold for $305,000 at the end of the project. The asset is in the 5-year MACRS class. The depreciation percentage each year is 20.00 percent, 32.00 percent, 19.20 percent, 11.52 percent, and 11.52 percent, respectively. The company's tax rate is 34 percent. What is the aftertax salvage value of the equipment?

103) \_\_\_\_\_\_

A) $252,218   
 B) $255,945  
 C) $305,000  
 D) $354,055  
 E) $201,300

**104)** Power Manufacturing has equipment that it purchased 6 years ago for $2,100,000. The equipment was used for a project that was intended to last for 8 years and was being depreciated over the life of the project. However, due to low demand, the project is being shut down. The equipment was depreciated using the straight-line method and can be sold for $310,000 today. The company's tax rate is 40 percent. What is the aftertax salvage value of the equipment?

104) \_\_\_\_\_\_

A) $224,000   
 B) $434,000  
 C) $353,000  
 D) $396,000  
 E) $310,000

**105)** A project is expected to generate annual revenues of $128,100, with variable costs of $78,700, and fixed costs of $19,200. The annual depreciation is $4,500 and the tax rate is 40 percent. What is the annual operating cash flow?

105) \_\_\_\_\_\_

A) $70,400   
 B) $30,200  
 C) $34,700  
 D) $51,200  
 E) $19,920

**106)** Bennett Company has a potential new project that is expected to generate annual revenues of $257,600, with variable costs of $142,000, and fixed costs of $59,800. To finance the new project, the company will need to issue new debt that will have an annual interest expense of $22,000. The annual depreciation is $24,200 and the tax rate is 35 percent. What is the annual operating cash flow?

106) \_\_\_\_\_\_

A) $124,070   
 B) $175,412  
 C) $80,000  
 D) $44,740  
 E) $42,270

**107)** Bi-Lo Traders is considering a project that will produce sales of $28,700 and have costs of $17,300. Taxes will be $3,100 and the depreciation expense will be $1,600. An initial cash outlay of $1,400 is required for net working capital. What is the project's operating cash flow?

107) \_\_\_\_\_\_

A) $9,900   
 B) $5,300  
 C) $6,900  
 D) $6,700  
 E) $8,300

**108)** You have calculated the pro forma net income for a new project to be $46,200. The incremental taxes are $22,890 and incremental depreciation is $16,950. What is the operating cash flow?

108) \_\_\_\_\_\_

A) $86,040   
 B) $46,200  
 C) $69,090  
 D) $29,250  
 E) $63,150

**109)** Rock Haven has a proposed project that will generate sales of 2,070 units annually at a selling price of $46 each. The fixed costs are $24,900 and the variable costs per unit are $15.55. The project requires $42,400 of fixed assets that will be depreciated on a straight-line basis to a zero book value over the 4-year life of the project. The salvage value of the fixed assets is $11,700 and the tax rate is 35 percent. What is the operating cash flow?

109) \_\_\_\_\_\_

A) $17,056   
 B) $21,075  
 C) $39,625  
 D) $28,495  
 E) $32,947

**110)** A gym owner is considering opening a location on the other side of town. The new facility will cost$1.59 million and will be depreciated on a straight-line basis over a 20-year period. The new gym is expected to generate $583,000 in annual sales. Variable costs are 37 percent of sales, the annual fixed costs are $95,300, and the tax rate is 35 percent. What is the operating cash flow?

110) \_\_\_\_\_\_

A) $344,830   
 B) $256,294  
 C) $299,815  
 D) $204,619  
 E) $123,022

**111)** A cost-cutting project will decrease costs by $65,500 a year. The annual depreciation will be $15,300 and the tax rate is 35 percent. What is the operating cash flow for this project?

111) \_\_\_\_\_\_

A) $37,220   
 B) $47,930  
 C) $42,575  
 D) $17,570  
 E) $28,280

**112)** The Lumber Yard is considering adding a new product line that is expected to increase annual sales by $357,000 and expenses by $248,000. The project will require $157,000 in fixed assets that will be depreciated using the straight-line method to a zero book value over the 6-year life of the project. The company has a marginal tax rate of 35 percent. What is the depreciation tax shield?

112) \_\_\_\_\_\_

A) $9,158   
 B) $38,150  
 C) $14,467  
 D) $17,008  
 E) $20,825

**113)** Seeing Red has a new project that will require fixed assets of $877,000, which will be depreciated on a 5-year MACRS schedule. The annual depreciation percentages are 20.00 percent, 32.00 percent, 19.20 percent, 11.52 percent, and 11.52 percent, respectively. The company has a tax rate of 35 percent. What is the depreciation tax shield for Year 3?

113) \_\_\_\_\_\_

A) $58,934   
 B) $61,390  
 C) $98,224  
 D) $51,158  
 E) $35,361

**114)** Pear Orchards is evaluating a new project that will require equipment of $215,000. The equipment will be depreciated on a 5-year MACRS schedule. The annual depreciation percentages are 20.00 percent, 32.00 percent, 19.20 percent, 11.52 percent, and 11.52 percent, respectively. The company plans to shut down the project after 4 years. At that time, the equipment could be sold for $45,000. However, the company plans to keep the equipment for a different project in another state. The tax rate is 39 percent. What aftertax salvage value should the company use when evaluating the current project?

114) \_\_\_\_\_\_

A) $45,000   
 B) $37,152  
 C) $48,061  
 D) $0  
 E) $41,939

**115)** A 4-year project has an annual operating cash flow of $47,000. At the beginning of the project, $3,800 in net working capital was required, which will be recovered at the end of the project. The firm also spent $21,500 on equipment to start the project. This equipment will have a book value of $4,300 at the end of the project, but can be sold for $5,400. The tax rate is 34 percent. What is the Year 4 cash flow?

115) \_\_\_\_\_\_

A) $48,226   
 B) $56,200  
 C) $56,574  
 D) $54,364  
 E) $55,826

**116)** Burke's Corner currently sells blue jeans and T-shirts. Management is considering adding fleece tops to its inventory to provide a cooler weather option. The tops would sell for $53 each with expected sales of 3,800 tops annually. By adding the fleece tops, management feels the firm will sell an additional 235 pairs of jeans at $63 a pair and 370 fewer T-shirts at $24 each. The variable cost per unit is $31 on the jeans, $15 on the T-shirts, and $27 on the fleece tops. With the new item, the depreciation expense is $33,000 a year and the fixed costs are $68,000 annually. The tax rate is 34 percent. What is the project's operating cash flow?

116) \_\_\_\_\_\_

A) $24,387   
 B) $28,783  
 C) $23,117  
 D) $38,709  
 E) $34,313

**117)** Go Fly A Kite is considering making and selling custom kites in two sizes. The small kites would be priced at $10.50 and the large kites would be $23.50. The variable cost per unit is $5.05 and $11.10, respectively. Jill, the owner, feels that she can sell 2,600 of the small kites and 1,700 of the large kites each year. The fixed costs would be $2,100 a year and the depreciation expense is $900. The tax rate is 34 percent. What is the annual operating cash flow?

117) \_\_\_\_\_\_

A) $24,514   
 B) $21,879  
 C) $11,577  
 D) $23,571  
 E) $22,185

**118)** A project will reduce costs by $38,800 but increase depreciation by $18,500. What is the operating cash flow if the tax rate is 40 percent?

118) \_\_\_\_\_\_

A) $23,280   
 B) $30,680  
 C) $34,380  
 D) $26,620  
 E) $22,920

**119)** A project has annual depreciation of $21,500, costs of $95,900, and sales of $140,500. The applicable tax rate is 40 percent. What is the operating cash flow?

119) \_\_\_\_\_\_

A) $26,440   
 B) $26,760  
 C) $35,360  
 D) $39,660  
 E) $92,900

**120)** King Nothing is evaluating a new 6-year project that will have annual sales of $420,000 and costs of $290,000. The project will require fixed assets of $520,000, which will be depreciated on a 5-year MACRS schedule. The annual depreciation percentages are 20.00 percent, 32.00 percent, 19.20 percent, 11.52 percent, 11.52 percent, and 5.76 percent, respectively. The company has a tax rate of 34 percent. What is the operating cash flow for Year 3?

120) \_\_\_\_\_\_

A) $151,694   
 B) $106,167  
 C) $78,146  
 D) $119,746  
 E) $115,267

**121)** A company is considering a new 6-year project that will have annual sales of $231,000 and costs of $144,000. The project will require fixed assets of $263,000, which will be depreciated on a 5-year MACRS schedule. The annual depreciation percentages are 20.00 percent, 32.00 percent, 19.20 percent, 11.52 percent, 11.52 percent, and 5.76 percent, respectively. The company has a tax rate of 40 percent. What is the operating cash flow for Year 2?

121) \_\_\_\_\_\_

A) $72,398   
 B) $85,864  
 C) $68,464  
 D) $69,733  
 E) $64,319

**122)** Bad Company has a new 4-year project that will have annual sales of 9,500 units. The price per unit is $21.00 and the variable cost per unit is $8.75. The project will require fixed assets of $105,000, which will be depreciated on a 3-year MACRS schedule. The annual depreciation percentages are 33.33 percent, 44.45 percent, 14.81 percent, and 7.41 percent, respectively. Fixed costs are $45,000 per year and the tax rate is 40 percent. What is the operating cash flow for Year 3?

122) \_\_\_\_\_\_

A) $49,045   
 B) $53,325  
 C) $76,045  
 D) $34,770  
 E) $56,519

**123)** A project with a life of 9 years is expected to provide annual sales of $410,000 and costs of $293,000. The project will require an investment in equipment of $715,000, which will be depreciated on a straight-line method over the life of the project. You feel that both sales and costs are accurate to +/-10 percent. The tax rate is 35 percent. What is the annual operating cash flow for the best-case scenario?

123) \_\_\_\_\_\_

A) $93,361   
 B) $149,551  
 C) $121,456  
 D) $121,745  
 E) $58,161

**124)** A 7-year project is expected to provide annual sales of $157,000 with costs of $89,500. The equipment necessary for the project will cost $280,000 and will be depreciated on a straight-line method over the life of the project. You feel that both sales and costs are accurate to +/-15 percent. The tax rate is 34 percent. What is the annual operating cash flow for the worst-case scenario?

124) \_\_\_\_\_\_

A) $49,122   
 B) $23,979  
 C) $20,147  
 D) $82,554  
 E) $33,747

**125)** A 6-year project is expected to generate annual sales of 8,500 units at a price of $72 per unit and a variable cost of $43 per unit. The equipment necessary for the project will cost $285,000 and will be depreciated on a straight-line basis over the life of the project. Fixed costs are $170,000 per year and the tax rate is 40 percent. How sensitive is the operating cash flow to a $1 change in the per unit sales price?

125) \_\_\_\_\_\_

A) $2,973   
 B) $5,100  
 C) $4,590  
 D) $3,377  
 E) $3,782

**126)** Sun Brite has a new pair of sunglasses it is evaluating. The company expects to sell 6,600 pairs of sunglasses at a price of $161 each and a variable cost of $113 each. The equipment necessary for the project will cost $345,000 and will be depreciated on a straight-line basis over the 5-year life of the project. Fixed costs are $270,000 per year and the tax rate is 35 percent. How sensitive is the operating cash flow to a $1 increase in variable costs per pairs of sunglasses?

126) \_\_\_\_\_\_

A) −$4,767   
 B) −$3,861  
 C) −$4,290  
 D) $3,861  
 E) $4,290

**127)** Bruno's Lunch Counter is expanding and expects operating cash flows of $31,700 a year for 6 years as a result. This expansion requires $110,300 in new fixed assets. These assets will be worthless at the end of the project. In addition, the project requires $7,800 of net working capital throughout the life of the project. What is the net present value of this expansion project at a required rate of return of 11 percent?

127) \_\_\_\_\_\_

A) $25,792   
 B) $29,170  
 C) $27,634  
 D) $20,178  
 E) $23,808

**128)** Jasper Metals is considering installing a new molding machine which is expected to produce operating cash flows of $71,000 per year for 9 years. At the beginning of the project, inventory will decrease by $30,400, accounts receivables will increase by $28,200, and accounts payable will increase by $20,400. At the end of the project, net working capital will return to the level it was prior to undertaking the new project. The initial cost of the molding machine is $303,000. The equipment will be depreciated straight-line to a zero book value over the life of the project. The equipment will be salvaged at the end of the project creating an aftertax cash flow of $84,000. What is the net present value of this project given a required return of 11.8 percent?

128) \_\_\_\_\_\_

A) $136,224   
 B) $141,166  
 C) $117,939  
 D) $131,419  
 E) $123,300

**129)** Gateway Communications is considering a project with an initial fixed assets cost of $1.74 million that will be depreciated straight-line to a zero book value over the 10-year life of the project. At the end of the project the equipment will be sold for an estimated $232,000. The project will not change sales but will reduce operating costs by $383,500 per year. The tax rate is 35 percent and the required return is 10.7 percent. The project will require $48,000 in net working capital, which will be recouped when the project ends. What is the project's NPV?

129) \_\_\_\_\_\_

A) $176,748   
 B) $171,046  
 C) $128,017  
 D) $164,467  
 E) $133,836

**130)** Cori's Dog House is considering the installation of a new computerized pressure cooker for hot dogs. The cooker will increase sales by $8,300 per year and will cut annual operating costs by $14,400. The system will cost $49,500 to purchase and install. This system is expected to have a 7-year life and will be depreciated to zero using straight-line depreciation and have no salvage value. The tax rate is 35 percent and the required return is 11.9 percent. What is the NPV of purchasing the pressure cooker?

130) \_\_\_\_\_\_

A) −$20,016   
 B) $29,383  
 C) $39,096  
 D) $7,918  
 E) −$1,794

**131)** The Bruin's Den Outdoor Gear is considering a new 7-year project to produce a new tent line. The equipment necessary would cost $1.99 million and be depreciated using straight-line depreciation to a book value of zero. At the end of the project, the equipment can be sold for 10 percent of its initial cost. The company believes that it can sell 31,000 tents per year at a price of $79 and variable costs of $38 per tent. The fixed costs will be $545,000 per year. The project will require an initial investment in net working capital of $253,000 that will be recovered at the end of the project. The required rate of return is 12.2 percent and the tax rate is 35 percent. What is the NPV?

131) \_\_\_\_\_\_

A) $519,085   
 B) $659,061  
 C) $882,949  
 D) $1,359,837  
 E) $464,069

**132)** Lakeside Winery is considering expanding its winemaking operations. The expansion will require new equipment costing $673,000 that would be depreciated on a straight-line basis to zero over the 4-year life of the project. The equipment will have a market value of $180,000 at the end of the project. The project requires $50,000 initially for net working capital, which will be recovered at the end of the project. The operating cash flow will be $215,900 a year. What is the net present value of this project if the relevant discount rate is 15 percent and the tax rate is 34 percent?

132) \_\_\_\_\_\_

A) −$10,098   
 B) –$10,771  
 C) −$9,088  
 D) −$11,968  
 E) −$12,889

**133)** Cirice Corporation is considering opening a branch in another state. The operating cash flow will be $179,800 a year. The project will require new equipment costing $550,000 that would be depreciated on a straight-line basis to zero over the 4-year life of the project. The equipment will have a market value of $149,000 at the end of the project. The project requires an initial investment of $34,000 in net working capital, which will be recovered at the end of the project. The tax rate is 34 percent. What is the project's IRR?

133) \_\_\_\_\_\_

A) 18.77%   
 B) 16.63%  
 C) 10.70%  
 D) 15.39%  
 E) 13.85%

**134)** Outdoor Sports is considering adding a putt putt golf course to its facility. The course would cost $178,000, would be depreciated on a straight-line basis over its 5-year life, and would have a zero salvage value. The sales would be $89,500 a year, with variable costs of $27,950 and fixed costs of $12,550. In addition, the firm anticipates an additional $19,700 in revenue from its existing facilities if the putt putt course is added. The project will require $3,150 of net working capital, which is recoverable at the end of the project. What is the net present value of this project at a discount rate of 15 percent and a tax rate of 35 percent?

134) \_\_\_\_\_\_

A) $11,874   
 B) $47,675  
 C) $13,458  
 D) $31,050  
 E) $15,024

**135)** Delia Landscaping is considering a new 4-year project. The necessary fixed assets will cost $205,000 and be depreciated on a 3-year MACRS and have no salvage value. The MACRS percentages each year are 33.33 percent, 44.45 percent, 14.81 percent, and 7.41 percent, respectively. The project will have annual sales of $142,000, variable costs of $38,500, and fixed costs of $13,100. The project will also require net working capital of $3,700 that will be returned at the end of the project. The company has a tax rate of 35 percent and the project's required return is 12 percent. What is the net present value of this project?

135) \_\_\_\_\_\_

A) $28,228   
 B) $31,195  
 C) $29,845  
 D) $24,391  
 E) $26,609

**ESSAY. Write your answer in the space provided or on a separate sheet of paper.  
136)** Should financing costs be included as an incremental cash flow in capital budgeting analysis?

**137)** Explain the underlying assumptions that are being made when a project's total investment in net working capital is recouped when the project ends.

**138)** This chapter introduced three new methods for calculating project operating cash flow (OCF). Under what circumstances is each method appropriate?

**139)** When is it appropriate to use the equivalent annual cost (EAC) methodology, and how do you make a decision using it?

**140)** Explain the use of real and nominal discount rates in discounting cash flows. Which is used more often and why?

**Answer Key**Test name: Chapter 6

1) A

2) C

3) D

4) E

5) B

6) C

7) D

8) B

9) A

10) D

11) C

12) C

13) A

14) C

15) D

16) D

17) A

18) E

19) D

20) C

21) E

22) B

23) D

24) A

25) C

26) E

27) B

28) A

29) D

30) C

31) C

32) E

33) C

34) B

35) E

36) A

37) D

38) B

CF0 = $825,000 + 1,400,000  
 CF0 = $2,225,000

39) D

CF0 = $522,000 + 3,100,000  
 CF0 = $3,622,000

40) E

CF0 = $137,500 + 6,700 + 39,000 + 780,000  
 CF0 = $963,200

41) D

Opportunity cost = $209,500 + 139,000  
 Opportunity cost = $348,500

42) A

Sales = 6,000($39) − 3,500($59)  
 Sales = $27,500

43) C

Erosion cost = $79(1,250)  
 Erosion cost = $98,750

44) D

Opportunity cost = $212,900 − 20,000  
 Opportunity cost = $192,900

45) B

Erosion cost = [(110 − 85)($140,000)] + [(220 − 200)($59,500)]  
 Erosion cost = $4,690,000

46) D

DepreciationYear 4 = $0, as all depreciation is taken in Year 1

47) A

Book valueYear 4 = $67,600(1 − .20 − .32 − .192 − .1152)  
 Book valueYear 4 = $11,681.28

48) E

DepreciationYear 3 = $945,000(.1920)  
 DepreciationYear 3 = $181,440

49) B

Profit = ($13,500 − $0)(1 − .21)  
 Profit = $10,665.00

50) D

Book value = $180,000(1 − .20 − .32 − .192)  
 Book value = $51,840  
   
 Taxable amount = $89,500 − 51,840  
 Taxable amount = $37,660  
   
 Tax = .21($37,660)  
 Tax = $7,908.60

51) E

Book valueYear 2 = $145,000(1 − .20 − .32)  
 Book valueYear 2 = $69,600  
   
 Aftertax cash flow = $91,500 − ($91,500 − 69,600)(.22)  
 Aftertax cash flow = $86,682

52) B

CF0 = −$618,000 − 23,000  
 CF0 = −$641,000  
   
 OCF = [$0 − (−$265,000)](1 − .21) + ($618,000/3)(.21)  
 OCF = $252,610  
   
 Aftertax salvage value = $60,000 − ($60,000 − 0)(.21)  
 Aftertax salvage value = $47,400  
   
 NPV = −$641,000 + $252,610[(1 − 1/1.143)/.14] + ($47,400 + 23,000)/1.143  
 NPV = −$7,014.54

53) C

Book valueYear 4 = $0, as the asset will be fully depreciated in Year 1  
   
 Aftertax cash flow = $10,000(1 − .21)  
 Aftertax cash flow = $7,900

54) D

NPV = −$62,000 − 3,000 + $26,500[(1 − 1/1.124)/.12] + $3,000/1.124  
 NPV = $17,396.31

55) B

NPV = −$108,000 + $73,000[(1 − 1/1.1258)/.125] − $60,000/1.1258  
 NPV = $225,005

56) C

NPV = −$98,000 + $42,000[(1 − 1/1.135)/.13] − $54,000/1.135  
 NPV = $20,415

57) B

NWC requirement = $61,000 − 28,000 + 36,000  
 NWC requirement = $69,000

58) A

NWC requirement = $115,000 + 12,000 + 22,000  
 NWC requirement = $149,000

59) D

NWC recovery = ($135,000 − 110,000)(.15)  
 NWC recovery = $3,750

60) B

NWC requirement3 = −($158,000 − 152,000)(.08)  
 NWC requirement3 = −$480

61) B

CF0 = −$150,000 − 35,000 + 75,000 − 200,000  
 CF0 = −$310,000

62) B

CF0 = −$8,500 − 11,000 + 4,200 − 310,000  
 CF0 = −$325,300  
   
 CO1 through 3 = $123,000  
   
 CO4 = $123,000 + $8,500 + 11,000 − 4,200 + 36,000  
 CO4 = $174,300  
   
 NPV = −$325,300 + $123,000[(1 − 1/1.1413)/.141] + $174,300/1.1414  
 NPV = $62,621

63) D

CF0 = −$7,000 − 11,000 + 3,600 − 298,000  
 CF0 = −$312,400  
   
 CO1 through 5 = $134,000  
   
 CO6 = $134,000 + $7,000 + 11,000 − 3,600 + 37,000  
 CO6 = $185,400  
   
 NPV = −$312,400 + $134,000[(1 − 1/1.1535)/.153] + $185,400/1.1536  
 NPV = $212,527

64) A

Aftertax salvage value = $2,500 − [$2,500 − ($11,600/4)](.23)  
 Aftertax salvage value = $2,592  
   
 NPV = −$11,600 − 500 + ($7,300 − 500)/1.12 + ($7,300 − 500)/1.122 + ($7,300 + 1,500 + 2,592)/1.123  
 NPV = $7,500.95

65) A

NPV = −$28,900 − 500 + $7,300[(1 − 1/1.146)/.14] − $500/1.143 + ($1,000 + 5,400)/1.146  
 NPV = $1,565.54

66) B

CF0 = −$325,000 − 160,000 − 35,000 + 100,000  
 CF0 = −$420,000  
   
 OCF = ($554,000 − 430,000)(1 − .21) + ($325,000/5)(.21)  
 OCF = $111,610  
   
 Aftertax salvage value = $325,000(.25) − {[$325,000(.25) − $0](.21)}  
 Aftertax salvage value = $64,187.50  
   
 CO5 = $111,610 + 160,000 + 35,000 − 100,000 + 64,187.50  
 CO5 = $270,797.50  
   
 NPV = −$420,000 + $111,610[(1 − 1/1.154)/.15] + $270,797.50/1.155  
 NPV = $33,278.35

67) B

OCF = ($195,000 − 117,500)(1 − .24)  
 OCF = $58,900  
   
 Year 1 depreciation tax shield = $164,800(.24)  
 Year 1 depreciation tax shield = $39,552  
   
 Aftertax salvage value = $37,500 − [($37,500 − 0)(.24)]  
 Aftertax salvage value = $28,500  
   
 NPV = −$164,800 − 42,400 + $39,552/1.13 + $58,900[(1 − 1/1.134)/.13] + ($28,500 + 42,400)/1.134  
 NPV = $46,482.43

68) C

OCF = ($275,000 − 198,000)(1 − .21) + ($289,400/5)(.21)  
 OCF = $72,984.80  
   
 Aftertax salvage value = $289,400(.20) − [$289,400(.20) − $289,400(2/5)](.21)  
 Aftertax salvage value = $70,034.80  
   
 CO3 = $36,700 + 27,800 − 16,500 + 72,984.80 + 70,034.80  
 CO3 = $191,019.60

69) E

After tax salvage value = $225,000 − [$225,000 − $1,400,000(.0576)](.22)  
 After tax salvage value = $193,240.80

70) D

Depreciation tax shieldYear 5 = $5,680,000/5(.21)  
 Depreciation tax shieldYear 5 = $238,560

71) E

OCF = ($50,000 − 30,000)(1 − .25) + ($150,000/10)(.25)  
 OCF = $18,750

72) E

Depreciation tax shieldYear 2 = $1,400,000(.32)(.25)  
 Depreciation tax shieldYear 2 = $112,000

73) D

OCF = ($110,000 − 70,000)(1 − .21) + ($80,000/4)(.21)  
 OCF = $35,800

74) C

OCF = $760,000(.05) + $80,000  
 OCF = $118,000

75) C

OCF = $760,000(.08) + $50,000  
 OCF = $110,800

76) D

OCF = $439,000(.06) + $32,000  
 OCF = $58,340

77) A

OCF = $375,000 − 146,000 − 48,141  
 OCF = $180,859

78) C

OCF = $101,900 = Sales − $187,400 − 17,600  
 Sales = $306,900

79) B

OCF = $16,000 − 10,000 − 950  
 OCF = $5,050

80) B

OCF = $0 − (−$12,000) − ($25,205 − 23,000)  
 OCF = $9,795

81) C

OCF = $6,000 − 2,500 − 700  
 OCF = $2,800

82) C

OCF = ($60,000 − 51,000)(1 − .23) + ($40,000/4)(.23)  
 OCF = $9,230

83) A

Depreciation tax shield = $0, as 100 percent of the depreciation will be taken in Year 1

84) C

EBIT = $0 − (−$12,000) − ($42,000/5)  
 EBIT = $3,600

85) B

OCF = [$0 − (−$215,000)](1 − .21) + ($1,400,000/8)(.21)  
 OCF = $206,600

86) B

NPV = −$25,000 − $5,000[(1 − 1/1.126)/.12]  
 NPV = −$45,557  
   
 $45,557 = EAC[(1 − 1/1.126)/.12]  
 EAC = $11,081

87) B

NPV = −$397,500 − $38,400[(1 − 1/1.165)/.16]  
 NPV = −$523,232.88  
   
 $523,232.88 = EAC[(1 − 1/1.165)/.16]  
 EAC = $159,800.23

88) A

NPVA = −$318,000 − $8,700[(1 − 1/1.1463)/.146]  
 NPVA = −$337,996.58  
   
 $337,996.58 = EACA[(1 − 1/1.1463)/.146]  
 EACA = $147,053.69  
   
 NPVB = −$247,000 − $9,300[(1 − 1/1.1462)/.146]  
 NPVB = −$262,196.50  
   
 $262,196.50 = EACB[(1 − 1/1.1462)/.146]  
 EACB = $160,459.86  
   
 Machine A lowers the annual cost of the equipment by about $13,406 (= $160,459.86 − 147,053.69).

89) C

NPV = −$118,000 − 16,000 + $45,000/1.115 + [$45,000(1 − .05)]/1.1152 + {[$45,000(1 − .05)2] + [$55,000 − ($55,000 − 0)(.23)] + $16,000}/1.1153  
 NPV = $12,136.54

90) D

NPV = 0 = −$156,000 − 32,000 + OCF[(1 − 1/1.164)/.16] + $68,400/1.164  
 $150,223.29 = OCF[(1 − 1/1.164)/.16]  
 OCF = $53,686.06

91) D

NPV = 0 = −$68,000 + OCF[(1 − 1/1.1255)/.125]  
 OCF = $19,098.07  
   
 NI = $19,098.07 − $68,000/5  
 NI = $5,498.07  
   
 EBIT = $5,498.07/(1 − .21)  
 EBIT = $6,959.58  
   
 Sales = $6,959.58 + $68,000/5 + $47,900  
 Sales = $68,459.58

92) D

NPV = 0 = −$218,000 − 41,000 + OCF{[1 − (1/1.143)]/.14} + $79,900/1.143  
 OCF = $88,330.01

93) D

OCF = $92,400 = Net income + $318,000/6  
 Net income = $39,400  
   
 $39,400 = [Sales − $198,200 − ($318,000/6)](1 − .21)  
 Sales = $301,073.42

94) D

*r* = (1.1483/1.0269) − 1  
 *r* = .1182, or 11.82%

95) D

*R* = 1.1025(1.028) − 1  
 *R*  = .1334, or 13.34%

96) D

*r* = (1.1596/1.04) − 1  
 *r* = .115, or 11.5%  
   
 NPV = −$25,000 + $12,200/1.115 + $14,600/1.1152 + $16,300/1.1153  
 NPV = $9,444.15

97) E

The opportunity cost of the building is what it could be sold for today, or $913,000

98) B

Opportunity cost = $252,000 − 20,160  
 Opportunity cost = $231,840

99) A

Sales = 435($8,600) + (255 − 360)($13,100) + (535 − 510)($6,600)  
 Sales = $2,530,500

100) E

Year 2 depreciation = .4445($2,550,000)  
 Year 2 depreciation = $1,133,475

101) A

Book value = $2,900,000 − 2,900,000(.3333 + .4445 + .1481)  
 Book value = $214,890

102) E

Book value = $3,550,000(.1152 + .0576)  
 Book value = $613,440  
   
 Tax refund (due) = ($613,440 − 720,000)(.35)  
 Tax refund (due) = −$37,296  
   
 Aftertax salvage value = $720,000 − 37,296  
 Aftertax salvage value = $682,704

103) D

Book value = $2,600,000(.1152 + .0576)  
 Book value = $449,280  
   
 Tax refund (due) = ($449,280 − 305,000)(.34)  
 Tax refund (due) = $49,055  
   
 Aftertax salvage value = $305,000 + 49,055  
 Aftertax salvage value = $354,055

104) D

Annual depreciation = $2,100,000/8  
 Annual depreciation = $262,500  
   
 Book value = $2,100,000 − 6($262,500)  
 Book value = $525,000  
   
 Tax refund (due) = ($525,000 − 310,000)(.40)  
 Tax refund (due) = $86,000  
   
 Aftertax salvage value = $310,000 + 86,000  
 Aftertax salvage value = $396,000

105) E

OCF = ($128,100 − 78,700 − 19,200)(1 − .40) + .40($4,500)  
 OCF = $19,920

106) D

OCF = ($257,600 − 142,000 − 59,800)(1 − .35) + .35($24,200)  
 OCF = $44,740

107) E

OCF = $28,700 − 17,300 − 3,100  
 OCF = $8,300

108) E

OCF = $46,200 + 16,950  
 OCF = $63,150

109) D

OCF = [2,070($46 − 15.55) − $24,900](1 − .35) + .35($42,400/4)  
 OCF = $28,495

110) D

OCF = [$583,000 − .37($583,000) − 95,300](1 − .35) + .35($1,590,000/20)  
 OCF = $204,619

111) B

OCF = $65,500(1 − .35) + .35($15,300)  
 OCF = $47,930

112) A

Depreciation tax shield = .35($157,000/6)  
 Depreciation tax shield = $9,158

113) A

Depreciation tax shield = .35($877,000(.1920))  
 Depreciation tax shield = $58,934

114) E

Book value = $215,000 − 215,000(.2000 + .3200 + .1920 + .1152)  
 Book value = $37,152  
   
 Tax refund (due) = ($37,152 − 45,000)(.39)  
 Tax refund (due) = −$3,061  
   
 Aftertax salvage value = 45,000 − 3,061  
 Aftertax salvage value = $41,939

115) E

Cash flow = $47,000 + 3,800 + 5,400 + .34($4,300 − 5,400)  
 Cash flow = $55,826

116) E

OCF = [3,800($53 − 27) + 235($63 − 31) − 370($24 − 15) − 68,000](1 − .34) + .34($33,000)  
 Cash flow = $34,313

117) E

OCF = [2,600($10.50 − 5.05) + 1,700($23.50 − 11.10) − 2,100](1 − .34) + .34($900)  
 Cash flow = $22,185

118) B

OCF = $38,800(1 − .40) + .40($18,500)  
 OCF = $30,680

119) C

OCF = ($140,500 − 95,900)(1 − .40) + .40($21,500)  
 OCF = $35,360

120) D

OCF = ($420,000 − 290,000)(1 − .34) + .34(.1920)($520,000)  
 OCF = $119,746

121) B

OCF = ($231,000 − 144,000)(1 − .40) + .40(.3200)($263,000)  
 OCF = $85,864

122) A

OCF = [9,500($21.00 − 8.75) − 45,000](1 − .40) + .40(.1481)($105,000)  
 OCF = $49,045

123) B

OCF = [$410,000(1.10) − 293,000(.90)](1 − .35) + .35($715,000/9)  
 OCF = $149,551

124) E

OCF = [$157,000(.85) − 89,500(1.15)](1 − .34) + .34($280,000/7)  
 OCF = $33,747

125) B

Base OCF = [8,500($72 − 43) − 170,000](1 − .40) + .40($285,000/6)  
 Base OCF = $64,900  
   
 New OCF = [8,500($73 − 43) − 170,000](1 − .40) + .40($285,000/6)  
 Base OCF = $70,000  
   
 Change in OCF = ($64,900 − 70,000)/(72 − 73)  
 Change in OCF = $5,100

126) C

Base OCF = [6,600($161 − 113) − 270,000](1 − .35) + .35($345,000/5)  
 Base OCF = $54,570  
   
 New OCF = [6,600($161 − 114) − 270,000](1 − .35) + .35($345,000/5)  
 Base OCF = $50,280  
   
 Change in OCF = ($54,570 − 50,280)/(113 − 114)  
 Change in OCF = −$4,290

127) D

NPV = 0 = −$110,300 − 7,800 + 31,700(PVIFA11%,6) + 7,800/1.116  
 NPV = $20,178

128) E

Year 0 CF = −$303,000 + 30,400 − 28,200 + 20,400  
 Year 0 CF = −$280,400  
   
 Year 9 CF (w/o OCF) = $84,000 − 30,400 + 28,200 − 20,400  
 Year 9 CF (w/o OCF) = $61,400  
   
 NPV = −$280,400 + 71,000(PVIFA11.8%,9) + 61,400/1.1189  
 NPV = $123,300

129) E

Year 0 CF = −$1,740,000 − 48,000  
 Year 0 CF = −$1,788,000  
   
 OCF = $383,500(1 − .35) + .35($1,740,000/10)  
 OCF = $310,175  
   
 Year 10 CF (w/o OCF) = $48,000 + 232,000(1 − .35)  
 Year 10 CF (w/o OCF) = $198,800  
   
 NPV = −$1,788,000 + 310,175(PVIFA10.7%,10) + 198,800/1.10710  
 NPV = $133,836

130) B

OCF = ($8,300 + 14,400)(1 − .35) + .35($49,500/7)  
 OCF = $17,230  
   
 NPV = −$49,500 + 17,230(PVIFA11.9%,7)  
 NPV = $29,383

131) A

Aftertax salvage value = ($1,990,000 × .10)(1 − .35)  
 Aftertax salvage value = $129,350  
   
 OCF = [31,000($79 − 38) − 545,000](1 − .35) + .35($1,990,000/7)  
 OCF = $571,400  
   
 NPV = −$1,990,000 − 253,000 + 571,400(PVIFA12.2%,7) + (129,350 + 253,000)/1.1227  
 NPV = $519,085

132) A

NPV = −$673,000 − 50,000 + $215,900(PVIFA15%,4) + [$50,000 + (1 − .34)($180,000)]/1.154  
 NPV = −$10,098

133) D

IRR = 0 = −$550,000 − 34,000 + $179,800(PVIFAIRR,4) + [$34,000 + (1 − .34)($149,000)]/(1 + IRR)4  
 IRR = 15.39%

134) A

OCF = ($89,500 + 19,700 − 27,950 − 12,550)(1 − .35) + .35($178,000/5)  
 OCF = $57,115  
   
 NPV = −$178,000 − 3,150 + $57,115(PVIFA15%,5) + $3,150/1.155  
 NPV = $11,874

135) C

Year 1 OCF = ($142,000 − 38,500 − 13,100)(1 − .35) + .35($205,000 × .3333) = $82,674  
   
 Year 2 OCF = ($142,000 − 38,500 − 13,100)(1 − .35) + .35($205,000 × .4445) = $90,653  
   
 Year 3 OCF = ($142,000 − 38,500 − 13,100)(1 − .35) + .35($205,000 × .1481) = $69,386  
   
 Year 4 OCF = ($142,000 − 38,500 − 13,100)(1 − .35) + .35($205,000 × .0741) = $64,077  
   
 NPV = −$205,000 − 3,700 + $82,674/1.12 + $90,653/1.122 + $69,386/1.123 + ($64,077 + 3,700)/1.124  
 NPV = $29,845

136) Financing costs are not an incremental cash flow for capital budgeting purposes. Financing costs are a direct consequence of how the project is financed, and do not indicate whether the project is economically viable. Financing costs are embedded in the required rate of return used to discount project cash flows.

137) A full recoupment of net working capital assumes that all cash balances are returned to their pre-project levels, all credit granted to customers is fully collected, all inventory is sold at cost, and all accounts payable are paid in full.

138) Three additional formulations of OCF are the bottom-up, top-down, and taxshield approaches. The bottom-up method is useful when the analyst has prepared pro forma income statements for a project (since OCF is equal to net income plus depreciation), provided there is no interest expense. The top-down approach defines OCF as sales minus cash costs minus taxes, and is useful when reliable estimates of the relevant dollar costs are available, perhaps in a situation where fixed and variable costs are the focus of the analysis. Finally, the taxshield approach separately illustrates the project benefits associated with aftertax gross profit (revenue gains and/or cost reductions) and the depreciation tax shield.

139) The EAC should be used to evaluate two or more mutually exclusive projects with different lives that will be replicated essentially forever. The manager should choose the project with the lowest, or least-negative, EAC.

140) The most important thing to remember is that real cash flows should be discounted at the real interest rate and nominal cash flows should be discounted at the nominal discount rate. Since real cash flows do not include inflation, discounting real cash flows at the nominal rate will artificially reduce the NPV and lead the analyst to reject projects that otherwise should be accepted. Likewise, since nominal cash flows do include inflation, they must be discounted at the nominal discount rate which includes inflation. Discounting nominal cash flows at the real discount rate will result in an artificially high NPV and thus lead to accepting projects that should otherwise not be accepted. Since most cash flows are nominal, nominal rates are used more often in practice.