CHAPTER 10

Making Capital Investment Decisions

I. DEFINITIONS

INCREMENTAL CASH FLOWS

a 1. The changes in a firm's future cash flows that are a direct consequence of accepting a project are called _____ cash flows.
   a. incremental
   b. stand-alone
   c. after-tax
   d. net present value
   e. erosion

STAND-ALONE PRINCIPLE

b 2. The evaluation of a project based solely on its incremental cash flows is the basis of the:
   a. incremental cash flow method.
   b. stand-alone principle.
   c. dividend growth model.
   d. after-tax salvage value analysis.
   e. discounted payback method.

SUNK COSTS

c 3. A cost that has already been paid, or the liability to pay has already been incurred, is a(n):
   a. salvage value expense.
   b. net working capital expense.
   c. sunk cost.
   d. opportunity cost.
   e. erosion cost.

OPPORTUNITY COSTS

d 4. The most valuable investment given up if an alternative investment is chosen is a(n):
   a. salvage value expense.
   b. net working capital expense.
   c. sunk cost.
   d. opportunity cost.
   e. erosion cost.

EROSION COSTS

e 5. The cash flows of a new project that come at the expense of a firm's existing projects are called:
   a. salvage value expenses.
   b. net working capital expenses.
   c. sunk costs.
   d. opportunity costs.
   e. erosion costs.

PRO FORMA FINANCIAL STATEMENTS

a 6. A pro forma financial statement is one that:
   a. projects future years' operations.
   b. is expressed as a percentage of the total assets of the firm.
   c. is expressed as a percentage of the total sales of the firm.
   d. is expressed relative to a chosen base year's financial statement.
   e. reflects the past and current operations of the firm.

MACRS DEPRECIATION

b 7. The depreciation method currently allowed under US tax law governing the accelerated write-off of property under various lifetime classifications is called _____ depreciation.
   a. FIFO
   b. MACRS
   c. straight-line
   d. sum-of-years digits
   e. curvilinear

DEPRECIATION TAX SHIELD

c 8. The cash flow tax savings generated as a result of a firm's tax-deductible depreciation expense is called the:
   a. after-tax depreciation savings.
   b. depreciable basis.
   c. depreciation tax shield.
   d. operating cash flow.
   e. after-tax salvage value.

CASH FLOW FROM PROJECTS

d 9. The cash flow from projects for a company is computed as the:
   a. net operating cash flow generated by the project, less any sunk costs and erosion costs.
   b. sum of the incremental operating cash flow and after-tax salvage value of the project.
   c. net income generated by the project, plus the annual depreciation expense.
   d. sum of the incremental operating cash flow, capital spending, and net working capital expenses incurred by the project.
   e. sum of the sunk costs, opportunity costs, and erosion costs of the project.

EQUIVALENT ANNUAL COST

e 10. The annual annuity stream of payments with the same present value as a project's costs is called the project's _____ cost.
   a. incremental
   b. sunk
   c. opportunity
   d. erosion
   e. equivalent annual

II. CONCEPTS

INCREMENTAL CASH FLOW

b 11. One purpose of identifying all of the incremental cash flows related to a proposed project is to:
   a. isolate the total sunk costs so they can be evaluated to determine if the project 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.

INCREMENTAL CASH FLOW

e 12. Which of the following are examples of an incremental cash flow?
   I. an increase in accounts receivable
   II. a decrease in net working capital
   III. an increase in taxes
   IV. a decrease in the cost of goods sold
   a. I and III only
   b. III and IV only
   c. I and IV only
   d. I, III, and IV only
   e. I, II, III, and IV

INCREMENTAL CASH FLOW

c 13. Which one of the following is an example of an incremental cash flow?
   a. the annual salary of the company president which is a contractual obligation
   b. the rent on a warehouse which is currently being utilized
   c. the rent on some new machinery that is required for an upcoming project
   d. the property taxes on the currently owned warehouse which has been sitting idle but is going to be utilized for a new project
   e. the insurance on a company-owned building which will be utilized for a new project

STAND-ALONE PRINCIPLE

d 14. The stand-alone principle advocates project analysis which is focused on _____ costs.
   a. sunk
   b. total
   c. variable
   d. incremental
   e. fixed

SUNK COST

c 15. Sunk costs include any cost that:
   a. will change if a project is undertaken.
   b. will be incurred if a project is accepted.
   c. has previously been incurred and cannot be changed.
   d. is 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.

SUNK COST

d 16. You spent $500 last week fixing the transmission in your car. Now, the brakes are acting up and you are trying to decide whether to fix them or trade the car in for a newer model. In analyzing the brake situation, the $500 you spent fixing the transmission is a(n) _____ cost.
   a. opportunity
   b. fixed
   c. incremental
   d. sunk
   e. relevant

EROSION

b 17. Erosion can be explained as the:
   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. loss of cash due to the expenses required to fix a parking lot after a heavy rain storm.

EROSION

a 18. Which of the following are examples of erosion?
   I. the loss of sales due to increased competition in the product market
   II. the loss of sales because your chief competitor just opened a store across the street from your store
   III. the loss of sales due to a new product which you recently introduced
   IV. the loss of sales due to a new product recently introduced by your competitor
   a. III only
   b. III and IV only
   c. I, III and IV only
   d. II and IV only
   e. I, II, III, and IV

TYPES OF COSTS

d 19. Which of the following should be included in the analysis of a project?
- I. sunk costs
- II. opportunity costs
- III. erosion costs
- IV. incremental costs

a. I and II only
b. III and IV only
c. II and IV only
d. II, III, and IV only
e. I, II, and IV only

NET WORKING CAPITAL

d 20. All of the following are anticipated effects of a proposed project. Which of these should be included in the initial project cash flow related to net working capital?
- I. an inventory decrease of $5,000
- II. an increase in accounts receivable of $1,500
- III. an increase in fixed assets of $7,600
- IV. a decrease in accounts payable of $2,100

a. I and II only
b. I and III only
c. II and IV only
d. I, II, and IV only
e. I, II, III, and IV

NET WORKING CAPITAL

a 21. Changes in the net working capital:
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. affect the initial and the final cash flows of a project but not the cash flows of the middle years.

NET WORKING CAPITAL

c 22. Which one of the following will decrease net working capital of a firm?
a. a decrease in accounts payable
b. an increase in inventory
c. a decrease in accounts receivable
d. an increase in the firm's checking account balance
e. a decrease in fixed assets

NET WORKING CAPITAL

d 23. Net working capital:
- 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.

PRO FORMA INCOME STATEMENT

b 24. The pro forma income statement for a cost reduction project:
- 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 a firm.
- d. cannot be prepared due to the lack of any project related sales.
- e. will always reflect a negative project operating cash flow.

PRO FORMA STATEMENTS

e 25. Pro forma statements for a proposed project should:
- I. be compiled on a stand-alone basis.
- II. include all the incremental cash flows related to a project.
- III. generally exclude interest expense.
- IV. include all project-related fixed asset acquisitions and disposals.
- a. I and II only
- b. II and III only
- c. I, II, and IV only
- d. II, III, and IV only
- e. I, II, III, and IV

PROJECT CASH FLOWS

b 26. Which one of the following statements is correct?
- a. Project analysis should only include the cash flows which affect the income statement.
- b. A project can create a positive cash flow from operations without affecting the sales level of a firm.
- c. For the majority of projects that increase sales, there will be a cash outflow related to net working capital that occurs at the end of the project.
- d. Interest expense should always be included as a cash outflow when analyzing a project.
- e. The opportunity cost of a company-owned building that is going to be used in a new project should be included as a cash inflow to the project.

MACRS

d 27. A company which uses the MACRS system of depreciation:
- a. will have equal depreciation costs each year of an asset's life.
- b. will expense the cost of nonresidential real estate over a period of 7 years.
- c. can depreciate the cost of land, if they so desire.
- d. will write off 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.

MACRS

a 28. Bet 'r Bilt Toys just purchased some MACRS 5-year property at a cost of $230,000. Which of the following will correctly give you the book value of this equipment at the end of year 2?

MACRS 5-year property

Year	Rate
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

I. 52 percent of the asset cost
II. 48 percent of the asset cost
III. 68 percent of 80 percent of the asset cost
IV. the asset cost, minus 20 percent of the asset cost, minus 32% of 80% of the asset cost

a. II only
b. III and IV only
c. I and III only
d. II and IV only
e. I, II, III, and IV

MACRS

e 29. Will Do, Inc. 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?

MACRS 5-year property

Year	Rate
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

a. $650,000 × (1-.20) × (1-.32) × (1-.192)
b. $650,000 × (1-.20) × (1-.32)
c. $650,000 × (1+.20) × (1+.32) × (1+.192)
d. $650,000 × (1-.192)
e. $650,000 × .192

BOOK VALUE

d 30. The book value of an asset is primarily used to compute the:

a. annual depreciation tax shield.
b. amount of cash received from the sale of an asset.
c. amount of tax saved annually due to the depreciation expense.
d. amount of tax due on the sale of an asset.
e. change in depreciation needed to reflect the market value of the asset.

BOOK VALUE

a 31. The book value of an asset will:
   a. remain constant if the asset is land.
   b. vary as the market value of the asset varies.
   c. decrease at a constant rate when MACRS depreciation is used.
   d. increase over the tax life of the asset.
   e. decrease faster under straight-line depreciation than under MACRS.

SALVAGE VALUE

c 32. The salvage value of an asset creates an after-tax cash inflow to the firm in an amount equal to the:
   a. sales price of the asset.
   b. sales price minus the book value.
   c. sales price minus the tax due based on the sales price minus the book value.
   d. sales price plus the tax due based on the sales price minus the book value.
   e. sales price plus the tax due based on the book value minus the sales price.

SALVAGE VALUE

e 33. The pre-tax salvage value of an asset is equal to the:
   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.

PROJECT OCF

a 34. A project's operating cash flow will increase when:
   a. the depreciation expense increases.
   b. the sales projections are lowered.
   c. the interest expense is lowered.
   d. the net working capital requirement increases.
   e. the earnings before interest and taxes decreases.

PROJECT CASH FLOWS

c 35. The cash flows of a project should:
   a. be computed on a pre-tax basis.
   b. include all sunk costs and opportunity costs.
   c. include all incremental costs, including 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.

PROJECT OCF

a 36. Which of the following are correct methods for computing the operating cash flow of a project assuming that the interest expense is equal to zero?

I. EBIT + D - T
II. EBIT + D +T
III. NI + D
IV. (Sales – Costs) × (T + D) × (1-T)

a. I and III only
b. II and IV only
c. II and III only
d. I, III, and IV only
e. II, III, and IV only

PROJECT CASH FLOWS

d 37. The cash flows of a project should include the related changes in which of the following accounts?

I. taxes
II. accounts payable
III. fixed assets
IV. long-term debt

a. I and II only
b. III and IV only
c. I and III only
d. I, II, and III only
e. I, II, III, and IV

BOTTOM-UP OCF

b 38. The bottom-up approach to computing the operating cash flow applies only when:

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.

TOP-DOWN OCF

a 39. The top-down approach to computing the operating cash flow:

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.

TAX SHIELD

d 40. An increase in which one of the following will increase the operating cash flow?

a. employee salaries
b. office rent
c. building maintenance
d. equipment depreciation
e. equipment rental

TAX SHIELD

c 41. Tax shield refers to a reduction in taxes created by:

a. a reduction in sales.
b. an increase in interest expense.
c. noncash expenses.
d. a project's incremental expenses.
e. opportunity costs.

COST-CUTTING

c 42. A project which is designed to improve the manufacturing efficiency of a firm but will generate no additional sales is referred to as a(n) _____ project.
a. sunk cost
b. opportunity
c. cost-cutting
d. revenue-cutting
e. revenue-generating

COST-CUTTING

a 43. Which of the following statements are correct concerning the analysis of a cost-cutting project that involves the acquisition of fixed assets?
I. The costs shown on the pro forma income statement represent a cash inflow.
II. The depreciation expense related to the fixed assets will lower the tax expense.
III. The project operating cash flow can be computed as sales - taxes + depreciation.
IV. Earnings before interest and taxes for the project is computed as depreciation plus the amount of the cost savings.
a. I and II only
b. III and IV only
c. I and III only
d. II and IV only
e. I, II, and IV only

BID PRICE

b 44. Which one of the following statements is correct concerning bid prices?
a. The competitor who wins the bid is the one who submits the highest bid price.
b. The winning bid may be at a price that is below break-even especially if there is a related aftermarket for the product.
c. A bid price is computed based on 110 percent of a firm's normal required return.
d. A bid price should be computed based solely on the operating cash flows of the proposed project.
e. A bid price should be computed based on a zero percent required rate of return.

EQUIVALENT ANNUAL COST

c 45. Toni's Tools 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:
a. net present value only.
b. both net present value and the internal rate of return.
c. their effective annual costs.
d. the depreciation tax shield approach.
e. the replacement parts approach.

EQUIVALENT ANNUAL COST

e 46. The equivalent annual cost method is useful in determining:
   a. the annual operating cost of a machine if the annual maintenance is performed versus when the maintenance is not performed as recommended.
   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 different machine lives, and will be replaced once they are worn out.

III. PROBLEMS

RELEVANT CASH FLOWS

d 47. Marshall's & Co. purchased a corner lot in Eglon City five years ago at a cost of $640,000. The lot was recently appraised at $810,000. At the time of the purchase, the company spent $50,000 to grade the lot and another $4,000 to build a small building on the lot to house a parking lot attendant who has overseen the use of the lot for daily commuter parking. The company now wants to build a new retail store on the site. The building cost is estimated at $1.2 million. What amount should be used as the initial cash flow for this building project?
   a. $1,200,000
   b. $1,840,000
   c. $1,890,000
   d. $2,010,000
   e. $2,060,000

RELEVANT CASH FLOWS

e 48. Jamestown Ltd. currently produces boat sails and is considering expanding its operations to include awnings for homes and travel trailers. The company owns land beside its current manufacturing facility that could be used for the expansion. The company bought this land ten years ago at a cost of $250,000. Today, the land is valued at $425,000. The grading and excavation work necessary to build on the land will cost $15,000. The company currently has some unused equipment which it currently owns valued at $60,000. This equipment could be used for producing awnings if $5,000 is spent for equipment modifications. Other equipment costing $780,000 will also be required. What is the amount of the initial cash flow for this expansion project?
   a. $800,000
   b. $1,050,000
   c. $1,110,000
   d. $1,225,000
   e. $1,285,000

RELEVANT CASH FLOWS

b 49. Wilbert's, Inc. paid $90,000, in cash, for a piece of equipment three years ago. Last year, the company spent $10,000 to update the equipment with the latest technology. The company no longer uses this equipment in their current operations and has received an offer of $50,000 from a firm who would like to purchase it. Wilbert's is debating whether to sell the equipment or to expand their operations such that the equipment can be used. When evaluating the expansion option, what value, if any, should Wilbert's assign to this equipment as an initial cost of the project?

a. $40,000
b. $50,000
c. $60,000
d. $80,000
e. $90,000

RELEVANT CASH FLOWS

a 50. Walks Softly, Inc. sells customized shoes. Currently, they sell 10,000 pairs of shoes annually at an average price of $68 a pair. They are considering adding a lower-priced line of shoes which sell for $49 a pair. Walks Softly estimates they can sell 5,000 pairs of the lower-priced shoes but will sell 1,000 less pairs of the higher-priced shoes by doing so. What is the amount of the sales that should be used when evaluating the addition of the lower-priced shoes?

a. $177,000
b. $245,000
c. $313,000
d. $789,000
e. $857,000

OPPORTUNITY COST

c 51. Your firm purchased a warehouse for $335,000 six years ago. Four years ago, repairs were made to the building which cost $60,000. The annual taxes on the property are $20,000. The warehouse has a current book value of $268,000 and a market value of $295,000. The warehouse is totally paid for and solely owned by your firm. If the company decides to assign this warehouse to a new project, what value, if any, should be included in the initial cash flow of the project for this building?

a. $0
b. $268,000
c. $295,000
d. $395,000
e. $515,000

OPPORTUNITY COST

d 52. You own a house that you rent for $1,200 a month. The maintenance expenses on the house average $200 a month. The house cost $89,000 when you purchased it several years ago. A recent appraisal on the house valued it at $210,000. The annual property taxes are $5,000. If you sell the house you will incur $20,000 in expenses. 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?

a. $89,000
b. $120,000
c. $185,000
d. $190,000
e. $210,000

OPPORTUNITY COST

c 53. Big Joe's owns a manufacturing facility that is currently sitting idle. The facility is located on a piece of land that originally cost $129,000. The facility itself cost $650,000 to build. As of now, the book value of the land and the facility are $129,000 and $186,500, respectively. Big Joe's received an offer of $590,000 for the land and facility last week. They rejected this offer even though they were told that it is a reasonable offer in today's market. If Big Joe's were to consider using this land and facility in a new project, what cost, if any, should they include in the project analysis?

a. $0
b. $315,500
c. $590,000
d. $650,000
e. $779,000

EROSION COST

b 54. Jamie's Motor Home Sales currently sells 1,000 Class A motor homes, 2,500 Class C motor homes, and 4,000 pop-up trailers each year. Jamie is considering adding a mid-range camper and expects that if she does so she can sell 1,500 of them. However, if the new camper is added, Jamie expects that her Class A sales will decline to 950 units while the Class C campers decline to 2,200. The sales of pop-ups will not be affected. Class A motor homes sell for an average of $125,000 each. Class C homes are priced at $39,500 and the pop-ups sell for $5,000 each. The new mid-range camper will sell for $47,900. What is the erosion cost?

a. $6,250,000
b. $18,100,000
c. $53,750,000
d. $93,150,000
e. $118,789,500

OCF

e 55. Ernie's Electrical is evaluating a project which will increase sales by $50,000 and costs by $30,000. The project will cost $150,000 and be depreciated straight-line to a zero book value over the 10 year life of the project. The applicable tax rate is 34 percent. What is the operating cash flow for this project?

a. $3,300
b. $5,000
c. $8,300
d. $13,300
e. $18,300

OCF

d 56. Kurt's Kabinets 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 sales of $110,000 with associated costs of $70,000. The project has a 4-year life. The company uses straight-line depreciation to a zero book value over the life of the project. The tax rate is 35 percent. What is the operating cash flow for this project?

a. $7,000
b. $13,000
c. $27,000
d. $33,000
e. $40,000

BOTTOM-UP OCF

c 57. Peter's Boats 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 operating cash flow if the company has no long-term debt?

a. $34,000
b. $86,400
c. $118,000
d. $120,400
e. $123,900

BOTTOM-UP OCF

d 58. Le Place has sales of $439,000, depreciation of $32,000, and net working capital of $56,000. The firm has a tax rate of 34 percent and a profit margin of 6 percent. The firm has no interest expense. What is the amount of the operating cash flow?

a. $49,384
b. $52,616
c. $54,980
d. $58,340
e. $114,340

TOP-DOWN OCF

b 59. Ben's Border Café is considering a project which will produce sales of $16,000 and increase cash expenses by $10,000. If the project is implemented, taxes will increase from $23,000 to $24,500 and depreciation will increase from $4,000 to $5,500. What is the amount of the operating cash flow using the top-down approach?

a. $4,000
b. $4,500
c. $6,000
d. $7,500
e. $8,500

TOP-DOWN OCF

c 60. Ronnie's Coffee House is considering a project which will produce sales of $6,000 and increase cash expenses by $2,500. If the project is implemented, taxes will increase by $1,300. The additional depreciation expense will be $1,000. An initial cash outlay of $2,000 is required for net working capital. What is the amount of the operating cash flow using the top-down approach?

a. $200
b. $1,500
c. $2,200
d. $3,500
e. $4,200

TAX SHIELD OCF

c 61. A project will increase sales by $60,000 and cash expenses by $51,000. The project will cost $40,000 and be depreciated using straight-line depreciation to a zero book value over the 4-year life of the project. The company has a marginal tax rate of 35 percent. What is the operating cash flow of the project using the tax shield approach?

a. $5,850
b. $8,650
c. $9,350
d. $9,700
e. $10,350

DEPRECIATION TAX SHIELD

a 62. A project will increase sales by $140,000 and cash expenses by $95,000. The project will cost $100,000 and be depreciated using the straight-line method to a zero book value over the 4-year life of the project. The company has a marginal tax rate of 34 percent. What is the value of the depreciation tax shield?

a. $8,500
b. $17,000
c. $22,500
d. $25,000
e. $37,750

MACRS DEPRECIATION

d 63. Sun Lee's Furniture just purchased some fixed assets classified as 5-year property for MACRS. The assets cost $24,000. What is the amount of the depreciation expense for the third year?

MACRS 5-year property

Year	Rate
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

a. $2,304
b. $2,507
c. $2,765
d. $4,608
e. $4,800

MACRS DEPRECIATION

a 64. You just purchased some equipment that is classified as 5-year property for MACRS. The equipment cost $67,600. What will the book value of this equipment be at the end of three years should you decide to resell the equipment at that point in time?

MACRS 5-year property

Year	Rate
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

a. $19,468.80
b. $20,280.20
c. $27,040.00
d. $48,131.20
e. $48,672.00

MACRS DEPRECIATION

d 65. LiCheng's Enterprises just purchased some fixed assets that are classified as 3-year property for MACRS. The assets cost $1,900. What is the amount of the depreciation expense for year 2?

MACRS 3-year property

Year	Rate
1	33.33%
2	44.44%
3	14.82%
4	7.41%

a. $562.93
b. $633.27
c. $719.67
d. $844.36
e. $1,477.63

MACRS DEPRECIATION

b 66. RP&A, Inc. purchased some fixed assets four years ago at a cost of $19,800. They no longer need these assets so are going to sell them today at a price of $3,500. The assets are classified as 5-year property for MACRS. What is the current book value of these assets?

MACRS 5-year property

Year	Rate
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

a. $1,140.48
b. $3,421.44
c. $3,500.00
d. $4,016.67
e. $5,702.40

SALVAGE VALUE

a 67. You own some equipment which you purchased three years ago at a cost of $135,000. The equipment is 5-year property for MACRS. You are considering selling the equipment today for $82,500. Which one of the following statements is correct if your tax rate is 34 percent?

MACRS 5-year property

Year	Rate
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

a. The tax due on the sale is $14,830.80.
b. The book value today is $8,478.
c. The book value today is $64,320.
d. The taxable amount on the sale is $38,880.
e. You will receive a tax refund of $13,219.20 as a result of this sale.

SALVAGE VALUE

d 68. Ronnie's Custom Cars purchased some fixed assets two years ago for $39,000. The assets are classified as 5-year property for MACRS. Ronnie is considering selling these assets now so he can buy some newer fixed assets which utilize the latest in technology. Ronnie has been offered $19,000 for his old assets. What is the net cash flow from the salvage value if the tax rate is 34 percent?

MACRS 5-year property

Year	Rate
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

a. $16,358.88
b. $17,909.09
c. $18,720.00
d. $18,904.80
e. $19,000.00

SALVAGE VALUE

c 69. Winslow, Inc. is considering the purchase of a $225,000 piece of equipment. The equipment is classified as 5-year MACRS property. The company expects to sell the equipment after four years at a price of $50,000. What is the after-tax cash flow from this sale if the tax rate is 35 percent?

MACRS 5-year property

Year	Rate
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

a. $37,036
b. $38,880
c. $46,108
d. $47,770
e. $53,892

PROJECT NPV

d 70. A project is expected to create operating cash flows of $22,500 a year for three years. The initial cost of the fixed assets is $50,000. These assets 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 10 percent?

a. $2,208.11
b. $2,954.17
c. $4,306.09
d. $5,208.11
e. $5,954.17

PROJECT NPV

c 71. A project will produce operating cash flows of $45,000 a year for four years. During the life of the project, inventory will be lowered by $30,000 and accounts receivable will increase by $15,000. Accounts payable will decrease by $10,000. The project requires the purchase of equipment at an initial cost of $120,000. 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 a $25,000 after-tax cash flow. 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 percent?

a. $3,483.48
b. $16,117.05
c. $27,958.66
d. $32,037.86
e. $49,876.02

PROJECT NPV

a 72. A project will produce an operating cash flow of $7,300 a year for three years. The initial cash investment in the project will be $11,600. The net after-tax salvage value is estimated at $3,500 and will be received during the last year of the project's life. What is the net present value of the project if the required rate of return is 11 percent?
   a. $8,798.29
   b. $9,896.87
   c. $10,072.72
   d. $13,353.41
   e. $20,398.29

COST-CUTTING

c 73. Matty's Place is considering the installation of a new computer system that will cut annual operating costs by $11,000. The system will cost $48,000 to purchase and install. This system is expected to have a 5-year life and will be depreciated to zero using straight-line depreciation. What is the amount of the earnings before interest and taxes for this project?
   a. -$9,600
   b. $1,000
   c. $1,400
   d. $11,000
   e. $20,600

COST-CUTTING

b 74. The Wolf's Den Outdoor Gear is considering replacing the equipment it uses to produce tents. The equipment would cost $1.4 million and lower manufacturing costs by an estimated $215,000 a year. The equipment will be depreciated using straight-line depreciation to a book value of zero. The life of the equipment is 8 years. The required rate of return is 13 percent and the tax rate is 34 percent. What is the net income from this proposed project?
   a. $13,600
   b. $26,400
   c. $32,400
   d. $40,000
   e. $53,600

COST-CUTTING

b 75. Thornley Machines is considering a 3-year project with an initial cost of $618,000. The project will not directly produce any sales but will reduce operating costs by $265,000 a year. The equipment is depreciated straight-line to a zero book value over the life of the project. At the end of the project the equipment will be sold for an estimated $60,000. The tax rate is 34 percent. The project will require $23,000 in extra inventory for spare parts and accessories. Should this project be implemented if Thornley's requires a 9 percent rate of return? Why or why not?
   a. no; The NPV is -$2,646.00.
   b. yes; The NPV is $27,354.00.
   c. yes; The NPV is $32,593.78.
   d. yes; The NPV is $43,106.54.
   e. yes; The NPV is $196,884.40.

BID PRICE

a 76. You are working on a bid to build three playgrounds a year for the next two years. This project requires the purchase of $48,000 of equipment which will be depreciated using straight-line depreciation to a zero book value over the two years. The equipment can be sold at the end of the project for $30,000. You will also need $10,000 in net working capital over the life of the project. The fixed costs will be $15,000 a year and the variable costs will be $65,000 per playground. Your required rate of return is 12 percent for this project and your tax rate is 35 percent. What is the minimal amount, rounded to the nearest $500, that you should bid per playground?

a. $76,000
b. $78,000
c. $78,500
d. $84,500
e. $85,000

BID PRICE

d 77. You are working on a bid to build four cabins a year for the next three years for a local campground. This project requires the purchase of $66,000 of equipment which will be depreciated using straight-line depreciation to a zero book value over the three years. The equipment can be sold at the end of the project for $40,000. You will also need $16,000 in net working capital over the life of the project. The fixed costs will be $18,000 a year and the variable costs will be $88,000 per cabin. Your required rate of return is 14 percent for this project and your tax rate is 34 percent. What is the minimal amount, rounded to the nearest $500, that you should bid per cabin?

a. $95,000
b. $95,500
c. $97,000
d. $98,500
e. $115,000

EQUIVALENT ANNUAL COST

c 78. Tool Makers, Inc. uses tool and die machines to produce equipment for other firms. The initial cost of one customized tool and die machine is $850,000. This machine costs $10,000 a year to operate. Each machine has a life of 3 years before it is replaced. What is the equivalent annual cost of this machine if the required return is 9 percent? (Round your answer to whole dollars)

a. $325,797
b. $340,002
c. $345,797
d. $347,648
e. $351,619

EQUIVALENT ANNUAL COST

b 79. Jackson & Sons uses packing machines to prepare their product for shipping. One machine costs $136,000 and lasts about 4 years before it needs replaced. The operating cost per machine is $6,000 a year. What is the equivalent annual cost of one packing machine if the required rate of return is 12 percent? (Round your answer to whole dollars)

a. $38,556
b. $50,776
c. $79,012
d. $101,006
e. $154,224

EQUIVALENT ANNUAL COST

d 80. Bruno's, Inc. is analyzing two machines to determine which one they should purchase. The company requires a 14 percent rate of return and uses straight-line depreciation to a zero book value. Machine A has a cost of $290,000, annual operating costs of $8,000, and a 3-year life. Machine B costs $180,000, has annual operating costs of $12,000, and has a 2-year life. Whichever machine is purchased will be replaced at the end of its useful life. Which machine should Bruno's purchase and why? (Round your answer to whole dollars)

a. machine A; because it will save the company about $8,600 a year
b. machine A; because it will save the company about $132,912 a year
c. machine B; because it will save the company about $200,000 a year
d. machine B; because it will save the company about $11,600 a year
e. machine B; because its equivalent annual cost is $199,759

NET WORKING CAPITAL

b 81. Kay's Nautique is considering a project which will require additional inventory of $128,000 and will also increase accounts payable by $45,000 as suppliers are willing to finance part of these purchases. Accounts receivable are currently $80,000 and are expected to increase by 10% if this project is accepted. What is the initial project cash flow needed for net working capital?

a. $75,000
b. $91,000
c. $99,000
d. $136,000
e. $181,000

NET WORKING CAPITAL

d 82. Lottie's Boutique needs to maintain 20 percent of its sales in net working capital. Lottie's is considering a 3-year project which will increase sales from their current level of $110,000 to $130,000 the first year and $145,000 a year for the following two years. What amount should be included in the project analysis for the last year of the project in regards to the net working capital?

a. -$35,000
b. -$7,000
c. $0
d. $7,000
e. $35,000

NET WORKING CAPITAL

b 83. Jeff's Stereo Sound is expanding its product offerings to reach a wider range of customers. The expansion project includes increasing the floor inventory by $150,000 and increasing its debt to suppliers by 50 percent of that amount. The company will also spend $200,000 for a building contractor to expand the size of the showroom. As part of the expansion plan, the company will be offering credit to its customers and thus expects accounts receivable to rise by $25,000. For the project analysis, what amount should be used as the initial cash flow for net working capital?

a. $75,000
b. $100,000
c. $125,000
d. $150,000
e. $175,000

Use this information to answer questions 84 through 87.

Margarite's Enterprises is considering a new project. The project will require $325,000 for new fixed assets, $160,000 for additional inventory and $35,000 for additional accounts receivable. Short-term debt is expected to increase by $100,000 and long-term debt is expected to increase by $300,000. The project has a 5-year life. The fixed assets will be depreciated straight-line to a zero book value over the life of the project. At the end of the project, the fixed assets can be sold for 25 percent of their original cost. The net working capital returns to its original level at the end of the project. The project is expected to generate annual sales of $554,000 and costs of $430,000. The tax rate is 35 percent and the required rate of return is 15 percent.

RELEVANT COSTS

b 84. What is the initial cost of this project?

a. $325,000
b. $420,000
c. $425,000
d. $520,000
e. $620,000

EBIT

b 85. What is the amount of the earnings before interest and taxes for the first year of this project?

a. $38,500
b. $59,000
c. $67,000
d. $76,500
e. $159,000

AFTER-TAX SALVAGE VALUE

c 86. What is the amount of the after-tax cash flow from the sale of the fixed assets at the end of this project? (Round your answer to whole dollars)
   a. $28,438
   b. $37,918
   c. $52,813
   d. $60,009
   e. $81,250

RECOVERY OF NET WORKING CAPITAL

a 87. What is the cash flow recovery from net working capital at the end of this project?
   a. $95,000
   b. $147,812
   c. $195,000
   d. $247,812
   e. $295,000

Use this information to answer questions 88 through 90.

Louie's Leisure Products is considering a project which will require the purchase of $1.4 million in new equipment. The equipment will be depreciated straight-line to a zero book value over the 7-year life of the project. Louie's expects to sell the equipment at the end of the project for 20 percent of its original cost. Annual sales from this project are estimated at $1.2 million. Net working capital equal to 20 percent of sales will be required to support the project. All of the net working capital will be recouped at the end of the project. The firm desires a minimal 14 percent rate of return on this project. The tax rate is 34 percent.

DEPRECIATION TAX SHIELD

b 88. What is the value of the depreciation tax shield in year 2 of the project?
   a. $34,000
   b. $68,000
   c. $132,000
   d. $200,000
   e. $268,000

AFTER-TAX SALVAGE VALUE

e 89. What is the amount of the after-tax salvage value of the equipment?
   a. $47,600
   b. $72,000
   c. $95,200
   d. $144,000
   e. $184,800

CHANGE IN NET WORKING CAPITAL

d 90. What is the recovery amount attributable to net working capital at the end of the project?
   a. $55,200
   b. $81,600
   c. $159,600
   d. $240,000
   e. $424,800

IV. ESSAYS

STAND-ALONE PRINCIPLE

91. What is the stand-alone principle? Why is it important to the analysis of capital projects in a corporation such as Microsoft?

    The stand-alone principle allows us to evaluate a project based solely on the incremental cash flows generated by the project. Without stand-alone evaluation, project analysis for a firm like Microsoft would require forecasting all of the firm's cash flows both with and without the project, a daunting task.

OPERATING CASH FLOW

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

    Three additional formulations of OCF provided in this chapter are the bottom-up, top-down, and tax-shield approaches. The first is useful when the analyst has prepared pro forma income statements for a project (since OCF is equal to net income plus depreciation). The top-down approach defines OCF as sales minus costs minus taxes, and is useful if one has reliable estimates of the relevant dollar costs (perhaps in a situation where fixed and variable costs are the focus of the analysis). Finally, the tax-shield approach separately illustrates the project benefits associated with after-tax gross profit (revenue gains and/or cost reductions) and with the depreciation tax shield.

RELEVANT CASH FLOWS

93. Give an example of a sunk cost and an opportunity cost.

    This question is open-ended and requires the student to use a little creativity.

SETTING A BID PRICE

94. Describe the procedure for setting a bid price and explain the manager's objective in setting this bid price. How is it that two different firms often arrive at different values for the bid price?

    The bid process involves determining the price for which the NPV of the project is zero (or some alternative minimum NPV level acceptable to the firm). In setting a bid price, a manager typically forecasts all relevant cash outflows and inflows exclusive of revenues. Then, the manager determines the level of OCF that will make the NPV just equal to zero. Finally, the manager works backwards up through the income statement to determine the bid price that results in the desired level of OCF. The ultimate objective here is to determine the price at which the firm just reaches its financial break-even point. Each bidding firm usually arrives at a different calculated bid price because they may use different assumptions in the evaluation process, such as the estimated time to complete the project, costs and quality of the materials used, estimated labor costs, the required rate of return, and so on.

EQUIVALENT ANNUAL COST

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

    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 whose EAC is lowest, that is, the least negative EAC value.

FINANCING COSTS

96. Should financing costs be included as an incremental cash flow in capital budgeting analysis?

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