Chapter 8
Capital Budgeting Cash Flows

■ Learning Goals

1. Understand the motives for key capital expenditure and the steps in the capital budgeting process.
2. Define basic capital budgeting terminology.
3. Discuss relevant cash flows, expansion versus replacement decisions, sunk costs and opportunity costs, and international budgeting.
4. Calculate the initial investment associated with a proposed capital expenditure.
5. Find the relevant operating cash inflows associated with a proposed capital expenditure.
6. Determine the terminal cash flow associated with a proposed capital expenditure.

■ True/False

1. Capital budgeting techniques are used to evaluate the firm's fixed asset investments which provide the basis for the firm's earning power and value.

   Answer: TRUE
   Level of Difficulty: 1
   Learning Goal: 1
   Topic: Concept of Capital Budgeting

2. The purchase of additional physical facilities, such as additional property or a new factory, is an example of a capital expenditure.

   Answer: TRUE
   Level of Difficulty: 1
   Learning Goal: 1
   Topic: Capital Budgeting Terminology

3. Capital budgeting is the process of evaluating and selecting short-term investments consistent with the firm's goal of owner wealth maximization.

   Answer: FALSE
   Level of Difficulty: 2
   Learning Goal: 1
   Topic: Concept of Capital Budgeting

4. A $60,000 outlay for a new machine with a usable life of 15 years is an operating expenditure that would appear as a fixed asset on the firm's balance sheet.

   Answer: FALSE
   Level of Difficulty: 2
   Learning Goal: 1
   Topic: Capital Budgeting Terminology

5. Capital expenditure is an outlay of funds invested only on fixed assets and is expected to produce benefits over a period of time greater than one year.

   Answer: FALSE
   Level of Difficulty: 2
   Learning Goal: 1
   Topic: Capital Budgeting Terminology

6. An outlay for advertising and management consulting is considered to be a current expenditure.

   Answer: FALSE
   Level of Difficulty: 2
   Learning Goal: 1
   Topic: Capital Budgeting Terminology

7. Capital expenditure proposals are reviewed to assess their appropriateness in light of the firm's overall objectives and plans, and to evaluate their economic validity.

   Answer: TRUE
   Level of Difficulty: 2
   Learning Goal: 1
   Topic: Concept of Capital Budgeting

8. A firm with limited funds must ration its funds by allocating them to projects that will maximize share value.

   Answer: TRUE
   Level of Difficulty: 1
   Learning Goal: 2
   Topic: Capital Rationing

9. Independent projects are projects that compete with one another, so that the acceptance of one eliminates the others from further consideration.

   Answer: FALSE
   Level of Difficulty: 2
   Learning Goal: 2
   Topic: Independent Projects

10. A non-conventional cash flow pattern associated with capital investment projects consists of an initial outflow followed by a series of inflows.

    Answer: FALSE
    Level of Difficulty: 2
    Learning Goal: 2
    Topic: Conventional versus Nonconventional Cash Flows

11. If a firm has unlimited funds to invest, all the independent projects that meet its minimum investment criteria can be implemented.

    Answer: TRUE
    Level of Difficulty: 2
    Learning Goal: 2
    Topic: Concept of Capital Budgeting

12. The following three projects are examples of mutually exclusive projects.
    (1) installing air conditioning in the plant
    (2) acquiring a small supplier
    (3) purchasing a new computer system

    Answer: FALSE
    Level of Difficulty: 2
    Learning Goal: 2
    Topic: Mutually Exclusive Projects

13. When the firm is confronted with a number of projects, some of which are mutually exclusive and some of which are independent, it must first determine the best of each group of mutually exclusive alternatives. The best of the acceptable independent projects can then be selected.

    Answer: TRUE
    Level of Difficulty: 3
    Learning Goal: 2
    Topic: Mutually Exclusive Projects

14. If a firm has unlimited funds to invest, all the mutually exclusive projects that meet its minimum investment criteria can be implemented.

    Answer: FALSE
    Level of Difficulty: 2
    Learning Goal: 2
    Topic: Mutually Exclusive Projects

15. Mutually exclusive projects are projects whose cash flows are unrelated to one another; the acceptance of one does not eliminate the others from further consideration.

    Answer: FALSE
    Level of Difficulty: 2
    Learning Goal: 2
    Topic: Mutually Exclusive Projects

16. To increase its production capacity, a firm is considering: 1) to expand its plant, 2) to acquire another company, or 3) to contract with another company for production. These three projects are examples of independent projects.

    Answer: FALSE
    Level of Difficulty: 3
    Learning Goal: 2
    Topic: Independent Projects

17. Accounting figures and cash flows are not necessarily the same due to the presence of certain non-cash expenditures on the firm's income statement.

    Answer: TRUE
    Level of Difficulty: 1
    Learning Goal: 3
    Topic: Relevant Cash Flows

18. The relevant cash flows for a proposed capital expenditure are the incremental after-tax cash outflows and resulting subsequent inflows.

    Answer: TRUE
    Level of Difficulty: 1
    Learning Goal: 3
    Topic: Relevant Cash Flows

19. Foreign direct investment is the transfer of capital, managerial, and technical assets to a foreign country.

    Answer: TRUE
    Level of Difficulty: 2
    Learning Goal: 3
    Topic: International Capital Budgeting

20. If a new asset is being considered as a replacement for an old asset, the relevant cash flows would be found by adding the expected cash flows attributed to old asset and the expected cash flows for new asset.

    Answer: FALSE
    Level of Difficulty: 2
    Learning Goal: 3
    Topic: Replacement Project Analysis

21. International capital budgeting differs from the domestic version because (1) cash inflows and outflows occur in a foreign currency, and (2) foreign investments potentially face significant political risk.

    Answer: TRUE
    Level of Difficulty: 3
    Learning Goal: 3
    Topic: International Capital Budgeting

22. In case of international capital budgeting, the U.S. company can minimize its political risk by subtracting the investment as a joint venture and by selecting a competent and well-connected local partner.

    Answer: TRUE
    Level of Difficulty: 3
    Learning Goal: 3
    Topic: International Capital Budgeting

23. Sunk costs are cash outlays that have already been made and therefore have no effect on the cash flows relevant to the current decision. As a result, sunk costs should not be included in a project's incremental cash flows.

    Answer: TRUE
    Level of Difficulty: 3
    Learning Goal: 3
    Topic: Sunk Costs

24. Opportunity costs should be included as cash outflows when determining a project's incremental cash flows.

    Answer: TRUE
    Level of Difficulty: 3
    Learning Goal: 3
    Topic: Opportunity Costs

25. In case of international capital budgeting, long-term currency risk can be minimized by at least partly financing the foreign investment with a dollar-denominated capital contribution from the parent company rather than in the local capital markets.

    Answer: FALSE
    Level of Difficulty: 4
    Learning Goal: 3
    Topic: International Capital Budgeting

26. To calculate the initial investment, we subtract all cash inflows occurring at time zero from all cash outflows occurring at time zero.

    Answer: TRUE
    Level of Difficulty: 1
    Learning Goal: 4
    Topic: Initial Investment

27. The depreciable value of an asset is equal to its purchase price minus installation costs, if any.

    Answer: FALSE
    Level of Difficulty: 1
    Learning Goal: 4
    Topic: Depreciable Value of an Asset

28. The book value of an asset is equal to its depreciable value minus the accumulated depreciation.

    Answer: TRUE
    Level of Difficulty: 1
    Learning Goal: 4
    Topic: Book Value of an Asset (Equation 8.1)

29. In case of an existing asset which is depreciable and is used in business and is sold for a price equal to its initial purchase price, the difference between the sales price and its book value is considered as recaptured depreciation and will be taxed as ordinary income.

    Answer: TRUE
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Depreciation and Taxes (Equation 8.1)

30. Recaptured depreciation is the portion of the sale price that is below book value and has not been depreciated.

    Answer: FALSE
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Depreciation and Taxes (Equation 8.1)

31. The basic cash flows that must be considered when determining the initial investment associated with a capital expenditure are the installed cost of the new asset, the after-tax proceeds (if any) from the sale of an old asset, and the change (if any) in net working capital.

    Answer: TRUE
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Initial Investment

32. Capital gain is the portion of the sale price that is in excess of the initial purchase price.

    Answer: TRUE
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Depreciation and Taxes

33. Recaptured depreciation is the portion of the sale price that is in excess of the initial purchase price.

    Answer: FALSE
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Depreciation and Taxes

34. If an asset is depreciable and used in business, any loss on sale of the asset is deductible only against capital gains.

    Answer: FALSE
    Level of Difficulty: 3
    Learning Goal: 4
    Topic: Depreciation and Taxes

35. The change in net working capital—regardless of whether an increase or decrease—is not taxable because it merely involves a net build-up or reduction of current accounts.

    Answer: TRUE
    Level of Difficulty: 3
    Learning Goal: 4
    Topic: Net Working Capital Investment

36. All benefits expected from a proposed project must be measured on a cash flow basis which may be found by adding any non-cash charges deducted as expense on the firm's income statement back to net profits after taxes.

    Answer: TRUE
    Level of Difficulty: 1
    Learning Goal: 5
    Topic: Operating Cash Flows

37. In evaluating a proposed project, since our concern is only with how much more or less operating cash will flow into the firm as a result of the proposed project, incremental operating cash inflows are the relevant cash flows.

Answer: TRUE
Level of Difficulty: 1
Learning Goal: 5
Topic: Operating Cash Flows

38. The basic motives for capital expenditures are to expand, replace, or renew fixed assets or to obtain some other, less tangible benefit over a long period.

Answer: TRUE
Level of Difficulty: 1
Learning Goal: 1
Topic: Motives for Capital Budgeting

39. The primary motive for capital expenditures is to refurbish fixed assets.

Answer: FALSE
Level of Difficulty: 1
Learning Goal: 1
Topic: Motives for Capital Budgeting

40. Research and development is considered to be a motive for making capital expenditures.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 1
Topic: Motives for Capital Budgeting

41. The capital budgeting process consists of five distinct but interrelated steps: proposal generation, review and analysis, decision making, implementation, and follow-up.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 1
Topic: Steps in Capital Budgeting Process

42. The capital budgeting process consists of four distinct but interrelated steps: proposal generation, review and analysis, decision making, and termination.

Answer: FALSE
Level of Difficulty: 3
Learning Goal: 1
Topic: Steps in Capital Budgeting Process

43. Independent projects are those whose cash flows are unrelated to one another; the acceptance of one does not eliminate the others from further consideration.

Answer: TRUE
Level of Difficulty: 3
Learning Goal: 2
Topic: Independent versus Mutually Exclusive Projects

44. Mutually exclusive projects are those whose cash flows are unrelated to one another; the acceptance of one does not eliminate the others from further consideration.

Answer: FALSE
Level of Difficulty: 3
Learning Goal: 2
Topic: Independent versus Mutually Exclusive Projects

45. Mutually exclusive projects are those whose cash flows compete with one another; the acceptance of one does not eliminate the others from further consideration.

Answer: FALSE
Level of Difficulty: 3
Learning Goal: 2
Topic: Independent versus Mutually Exclusive Projects

46. Mutually exclusive projects are those whose cash flows compete with one another; the acceptance of one eliminates the others from further consideration.

Answer: TRUE
Level of Difficulty: 3
Learning Goal: 2
Topic: Independent versus Mutually Exclusive Projects

47. If a firm is subject to capital rationing, it is able to accept all independent projects that provide an acceptable return.

Answer: FALSE
Level of Difficulty: 2
Learning Goal: 2
Topic: Capital Rationing

48. If a firm has unlimited funds, it is able to accept all independent projects that provide an acceptable return.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 2
Topic: Capital Rationing

49. If a firm is subject to capital rationing, it has only a fixed number of dollars available for capital expenditures, and numerous projects compete for these dollars.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 2
Topic: Capital Rationing

50. The ranking approach involves the ranking of capital expenditure projects on the basis of some predetermined measure such as the rate of return.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 2
Topic: Accept-Reject versus Ranking Approach

51. The accept-reject approach involves the ranking of capital expenditure projects on the basis of some predetermined measure such as the rate of return.

Answer: FALSE
Level of Difficulty: 2
Learning Goal: 2
Topic: Accept-Reject versus Ranking Approach

52. A conventional cash flow pattern is one in which an initial outflow is followed only by a series of inflows.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 2
Topic: Conventional versus Nonconventional Cash Flows

53. A nonconventional cash flow pattern is one in which an initial outflow is followed only by a series of inflows.

Answer: FALSE
Level of Difficulty: 2
Learning Goal: 2
Topic: Conventional versus Nonconventional Cash Flows

54. A nonconventional cash flow pattern is one in which an initial outflow is followed by a series of both inflows and outflows.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 2
Topic: Conventional versus Nonconventional Cash Flows

55. Relevant cash flows are the incremental cash outflows and resulting subsequent cash inflows associated with a proposed capital expenditure.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 2
Topic: Relevant Cash Flows

56. The three major cash flow components include the initial investment, operating cash inflows, and terminal cash flows.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 2
Topic: Major Cash Flow Components

57. The three major cash flow components include the initial investment, non-operating cash inflows, and terminal cash flows.

Answer: FALSE
Level of Difficulty: 2
Learning Goal: 2
Topic: Major Cash Flow Components

58. A sunk cost is a cash flow that could be realized from the best alternative use of an owned asset.

Answer: FALSE
Level of Difficulty: 2
Learning Goal: 3
Topic: Sunk Cost

59. An opportunity cost is a cash flow that could be realized from the best alternative use of an owned asset.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 3
Topic: Opportunity Cost

60. A sunk cost is a cash outlay that has already been made and therefore has no effect on the cash flows relevant to a current decision.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 3
Topic: Sunk Cost

61. If an asset is sold for more than its initial purchase price, the gain on the sale is composed of two parts: a capital gain and recaptured depreciation.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 4
Topic: Depreciation and Taxes

62. If an asset is sold for book value, the gain on the sale is composed of two parts: a capital gain and recaptured depreciation.

Answer: FALSE
Level of Difficulty: 2
Learning Goal: 4
Topic: Depreciation and Taxes (Equation 8.1)

63. If an asset is sold for less than its book value, the loss on the sale may be used to offset ordinary operating income.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 4
Topic: Depreciation and Taxes (Equation 8.1)

64. If an investment in a new asset results in a change in current assets that exceeds the change in current liabilities, this change in net working capital represents a cash outflow.

Answer: TRUE
Level of Difficulty: 3
Learning Goal: 4
Topic: Net Working Capital Investment

65. If an investment in a new asset results in a change in current liabilities that exceeds the change in current assets, this change in net working capital represents a cash outflow.

Answer: FALSE
Level of Difficulty: 3
Learning Goal: 4
Topic: Net Working Capital Investment

66. In computing after-tax operating cash flows, both operating costs and financing costs must be deducted from any cash inflows received.

Answer: FALSE
Level of Difficulty: 2
Learning Goal: 5
Topic: Operating Cash Flows

67. In computing after-tax operating cash flows, only operating costs but not financing costs must be deducted from any cash inflows received.

Answer: TRUE
Level of Difficulty: 2
Learning Goal: 5
Topic: Operating Cash Flows

■ Multiple Choice Questions

1. _____ is the process of evaluating and selecting long-term investments consistent with the firm's goal of owner wealth maximization.
   (a) Recapitalizing assets
   (b) Capital budgeting
   (c) Ratio analysis
   (d) Restructuring debt

   Answer: B
   Level of Difficulty: 1
   Learning Goal: 1
   Topic: Concept of Capital Budgeting

2. Fixed assets that provide the basis for the firm's profit and value are often called
   (a) tangible assets.
   (b) non-current assets.
   (c) earning assets.
   (d) book assets.

   Answer: C
   Level of Difficulty: 1
   Learning Goal: 1
   Topic: Capital Budgeting Terminology

3. The most common motive for adding fixed assets to the firm is
   (a) expansion.
   (b) replacement.
   (c) renewal.
   (d) transformation.

   Answer: A
   Level of Difficulty: 1
   Learning Goal: 1
   Topic: Motives for Capital Budgeting Expenditures

4. The final step in the capital budgeting process is
   (a) implementation.
   (b) follow-up monitoring.
   (c) re-evaluation.
   (d) education.

   Answer: B
   Level of Difficulty: 1
   Learning Goal: 1
   Topic: Steps in Capital Budgeting Process

5. The first step in the capital budgeting process is
   (a) review and analysis.
   (b) implementation.
   (c) decision-making.
   (d) proposal generation.

   Answer: D
   Level of Difficulty: 1
   Learning Goal: 1
   Topic: Steps in Capital Budgeting Process

6. A $60,000 outlay for a new machine with a usable life of 15 years is called
   (a) capital expenditure.
   (b) operating expenditure.
   (c) replacement expenditure.
   (d) none of the above.

   Answer: A
   Level of Difficulty: 2
   Learning Goal: 1
   Topic: Capital Budgeting Terminology

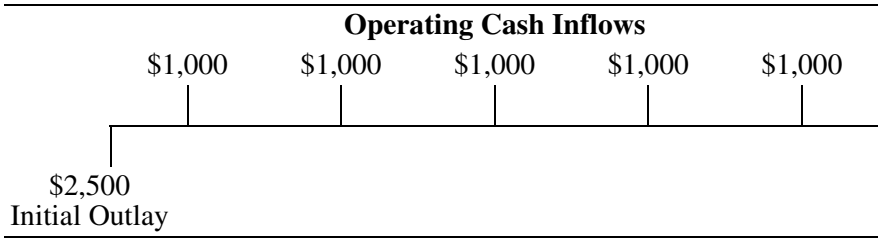
7. A capital expenditure is all of the following except
   (a) an outlay made for the earning assets of the firm.
   (b) expected to produce benefits over a period of time greater than one year.
   (c) an outlay for current asset expansion.
   (d) commonly used to expand the level of operations.

   Answer: C
   Level of Difficulty: 2
   Learning Goal: 1
   Topic: Concept of Capital Budgeting

8. Which pattern of cash flow stream is the most difficult to use when evaluating projects?
   (a) Mixed stream.
   (b) Conventional flow.
   (c) Nonconventional flow.
   (d) Annuity.

   Answer: C
   Level of Difficulty: 1
   Learning Goal: 2
   Topic: Conventional versus Nonconventional Cash Flows

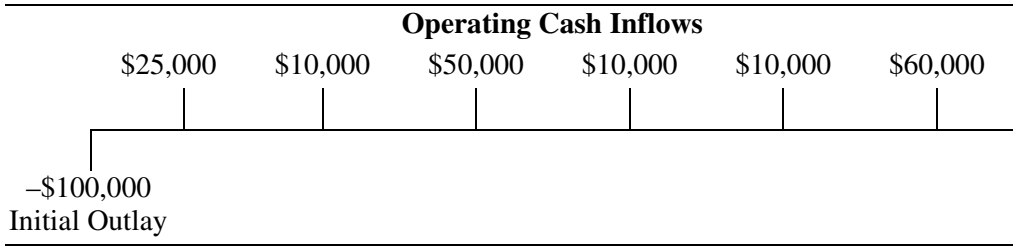
Table 8.1



9. The cash flow pattern depicted is associated with a capital investment and may be characterized as (See Table 8.1.)
   (a) an annuity and conventional cash flow.
   (b) a mixed stream and non-conventional cash flow.
   (c) an annuity and non-conventional cash flow.
   (d) a mixed stream and conventional cash flow.

   Answer: A
   Level of Difficulty: 1
   Learning Goal: 2
   Topic: Conventional versus Nonconventional Cash Flows

Table 8.2



10. The cash flow pattern depicted is associated with a capital investment and may be characterized as (See Table 8.2.)
    (a) an annuity and conventional cash flow.
    (b) a mixed stream and non-conventional cash flow.
    (c) an annuity and non-conventional cash flow.
    (d) a mixed stream and conventional cash flow.

    Answer: D
    Level of Difficulty: 1
    Learning Goal: 2
    Topic: Conventional versus Nonconventional Cash Flows

11. _____ projects do not compete with each other; the acceptance of one _____ the others from consideration.
    (a) Capital; eliminates
    (b) Independent; does not eliminate
    (c) Mutually exclusive; eliminates
    (d) Replacement; does not eliminate

    Answer: B
    Level of Difficulty: 1
    Learning Goal: 2
    Topic: Independent Projects

12. _____ projects have the same function; the acceptance of one _____ the others from consideration.
    (a) Capital; eliminates
    (b) Independent; does not eliminate
    (c) Mutually exclusive; eliminates
    (d) Replacement; does not eliminate

    Answer: C
    Level of Difficulty: 1
    Learning Goal: 2
    Topic: Mutually Exclusive Projects

13. A firm with limited dollars available for capital expenditures is subject to
    (a) capital dependency.
    (b) mutually exclusive projects.
    (c) working capital constraints.
    (d) capital rationing.

    Answer: D
    Level of Difficulty: 1
    Learning Goal: 2
    Topic: Capital Rationing

14. A conventional cash flow pattern associated with capital investment projects consists of an initial
    (a) outflow followed by a broken cash series.
    (b) inflow followed by a broken series.
    (c) outflow followed by a series of inflows.
    (d) inflow followed by a series of outflows.

    Answer: C
    Level of Difficulty: 1
    Learning Goal: 2
    Topic: Conventional versus Nonconventional Cash Flows

15. A non-conventional cash flow pattern associated with capital investment projects consists of an initial
    (a) outflow followed by a series of cash inflows and outflows.
    (b) inflow followed by a series of cash inflows and outflows.
    (c) outflow followed by a series of inflows.
    (d) inflow followed by a series of outflows.

    Answer: A
    Level of Difficulty: 1
    Learning Goal: 2
    Topic: Conventional versus Nonconventional Cash Flows

16. _____ is a series of equal annual cash flows.
    (a) A mixed stream
    (b) A conventional
    (c) A non-conventional
    (d) An annuity

    Answer: D
    Level of Difficulty: 1
    Learning Goal: 2
    Topic: Annuity Cash Flows

17. The cash flows of any project having a conventional pattern include all of the basic components except

(a) initial investment.
(b) operating cash outflows.
(c) operating cash inflows.
(d) terminal cash flow.

Answer: B
Level of Difficulty: 1
Learning Goal: 2
Topic: Conventional versus Nonconventional Cash Flows

18. Projects that compete with one another, so that the acceptance of one eliminates the others from further consideration are called

(a) independent projects.
(b) mutually exclusive projects.
(c) replacement projects.
(d) None of the above.

Answer: B
Level of Difficulty: 2
Learning Goal: 2
Topic: Mutually Exclusive Projects

19. A firm with unlimited funds must evaluate five projects. Projects 1 and 2 are independent and Projects 3, 4, and 5 are mutually exclusive. The projects are listed with their returns.

Project	**Status**	**Return(%)**
1	Independent	14
2	Independent	12
3	Mutually exclusive	10
4	Mutually exclusive	15
5	Mutually exclusive	12

A ranking of the projects on the basis of their returns from the best to the worst according to their acceptability to the firm would be

(a) 4, 1, 2 or 5, and 3.
(b) 4, 1, and 2.
(c) 3, 2 or 5, 1, and 4.
(d) 4, 1, 5, and 3.

Answer: B
Level of Difficulty: 3
Learning Goal: 2
Topic: Independent versus Mutually Exclusive Projects

20. Initial cash flows and subsequent operating cash flows for a project are sometimes referred to as
    (a) necessary cash flows.
    (b) relevant cash flows.
    (c) consistent cash flows.
    (d) ordinary cash flows.

    Answer: B
    Level of Difficulty: 1
    Learning Goal: 3
    Topic: Relevant Cash Flows

21. When making replacement decisions, the development of relevant cash flows is complicated when compared to expansion decisions, due to the need to calculate _____ cash inflows.
    (a) conventional
    (b) non-conventional
    (c) incremental
    (d) initial

    Answer: C
    Level of Difficulty: 2
    Learning Goal: 3
    Topic: Replacement Project Analysis

22. Relevant cash flows for a project are best described as
    (a) incidental cash flows.
    (b) incremental cash flows.
    (c) sunk cash flows.
    (d) accounting cash flows.

    Answer: B
    Level of Difficulty: 2
    Learning Goal: 3
    Topic: Relevant Cash Flows

23. In developing the cash flows for an expansion project, the analysis is the same as the analysis for replacement projects where
    (a) all cash flows from the old assets are equal.
    (b) prior cash flows are irrelevant.
    (c) all cash flows from the old asset are zero.
    (d) cash inflows equal cash outflows.

    Answer: C
    Level of Difficulty: 2
    Learning Goal: 3
    Topic: Expansion versus Replacement Project Analysis

24. When evaluating a capital budgeting project the change in net working capital must be considered as part of
    (a) the operating cash inflows.
    (b) the initial investment.
    (c) the incremental operating cash inflows.
    (d) the operating cash outflows.

    Answer: B
    Level of Difficulty: 1
    Learning Goal: 4
    Topic: Net Working Capital Investment

25. The change in net working capital when evaluating a capital budgeting decision is
    (a) current assets minus current liabilities.
    (b) the increase in current assets.
    (c) the increase in current liabilities.
    (d) the change in current assets minus the change in current liabilities.

    Answer: D
    Level of Difficulty: 1
    Learning Goal: 4
    Topic: Net Working Capital Investment

26. The book value of an asset is equal to the
    (a) fair market value minus the accounting value.
    (b) original purchase price minus annual depreciation expense.
    (c) original purchase price minus accumulated depreciation.
    (d) depreciated value plus recaptured depreciation.

    Answer: C
    Level of Difficulty: 1
    Learning Goal: 4
    Topic: Book Value of an Asset (Equation 8.1)

27. An important cash inflow in the analysis of initial cash flows for a replacement project is
    (a) taxes.
    (b) the cost of the new asset.
    (c) installation cost.
    (d) the sale value of the old asset.

    Answer: D
    Level of Difficulty: 1
    Learning Goal: 4
    Topic: Replacement Project Analysis

28. The tax treatment regarding the sale of existing assets that are sold for more than the book value and more than the original purchase price results in
    (a) an ordinary tax benefit.
    (b) no tax benefit or liability.
    (c) recaptured depreciation taxed as ordinary income.
    (d) a capital gain tax liability and recaptured depreciation taxed as ordinary income.

    Answer: D
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Depreciation and Taxes (Equation 8.1)

29. In evaluating the initial investment for a capital budgeting project,
    (a) an increase in net working capital is considered a cash inflow.
    (b) a decrease in net working capital is considered a cash outflow.
    (c) an increase in net working capital is considered a cash outflow.
    (d) net working capital does not have to be considered.

    Answer: C
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Net Working Capital Investment

30. The basic variables that must be considered in determining the initial investment associated with a capital expenditure are all of the following EXCEPT
    (a) incremental annual savings produced by the new asset.
    (b) cost of the new asset.
    (c) proceeds from the sale of the existing asset.
    (d) taxes on the sale of an existing asset.

    Answer: A
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Initial Investment

31. The tax treatment regarding the sale of existing assets that are sold for more than the book value but less than the original purchase price results in
    (a) an ordinary tax benefit.
    (b) a capital gain tax liability.
    (c) recaptured depreciation taxed as ordinary income.
    (d) a capital gain tax liability and recaptured depreciation taxed as ordinary income.

    Answer: C
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Depreciation and Taxes (Equation 8.1)

32. The tax treatment regarding the sale of existing assets that are sold for their book value results in
    (a) an ordinary tax benefit.
    (b) no tax benefit or liability.
    (c) recaptured depreciation taxed as ordinary income.
    (d) a capital gain tax liability and recaptured depreciation taxed as ordinary income.

    Answer: B
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Depreciation and Taxes (Equation 8.1)

33. The tax treatment regarding the sale of existing assets that are not depreciable or used in business and are sold for less than the book value results in
    (a) an ordinary tax benefit.
    (b) a capital gain tax benefit.
    (c) recaptured depreciation taxed as ordinary income.
    (d) a capital gain tax liability and recaptured depreciation taxed as ordinary income.

    Answer: B
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Depreciation and Taxes (Equation 8.1)

34. A corporation is considering expanding operations to meet growing demand. With the capital expansion, the current accounts are expected to change. Management expects cash to increase by $20,000, accounts receivable by $40,000, and inventories by $60,000. At the same time accounts payable will increase by $50,000, accruals by $10,000, and long-term debt by $100,000. The change in net working capital is
    (a) an increase of $120,000.
    (b) a decrease of $40,000.
    (c) a decrease of $120,000.
    (d) an increase of $60,000.

    Answer: D
    Level of Difficulty: 3
    Learning Goal: 4
    Topic: Net Working Capital Investment

35. A corporation is considering expanding operations to meet growing demand. With the capital expansion the current accounts are expected to change. Management expects cash to increase by $10,000, accounts receivable by $20,000, and inventories by $30,000. At the same time accounts payable will increase by $40,000, accruals by $30,000, and long-term debt by $80,000. The change in net working capital is
    (a) an increase of $10,000.
    (b) a decrease of $10,000.
    (c) a decrease of $90,000.
    (d) an increase of $80,000.

    Answer: B
    Level of Difficulty: 3
    Learning Goal: 4
    Topic: Net Working Capital Investment

36. The tax treatment regarding the sale of existing assets that are depreciable and used in business and are sold for less than the book value results in

(a) a tax benefit from an ordinary loss.
(b) a capital gain tax liability.
(c) recaptured depreciation taxed as ordinary income.
(d) a capital gain tax liability and recaptured depreciation taxed as ordinary income.

Answer: A
Level of Difficulty: 3
Learning Goal: 4
Topic: Depreciation and Taxes (Equation 8.1)

37. A corporation is selling an existing asset for $21,000. The asset, when purchased, cost $10,000, was being depreciated under MACRS using a five-year recovery period, and has been depreciated for four full years. If the assumed tax rate is 40 percent on ordinary income and capital gains, the tax effect of this transaction is

(a) $0 tax liability.
(b) $7,560 tax liability.
(c) $4,400 tax liability.
(d) $7,720 tax liability.

Answer: D
Level of Difficulty: 3
Learning Goal: 4
Topic: Depreciation and Taxes (Equation 8.1)

38. A corporation is selling an existing asset for $1,700. The asset, when purchased, cost $10,000, was being depreciated under MACRS using a five-year recovery period, and has been depreciated for four full years. If the assumed tax rate is 40 percent on ordinary income and capital gains, the tax effect of this transaction is

(a) $0 tax liability.
(b) $840 tax liability.
(c) $3,160 tax liability.
(d) $3,160 tax benefit.

Answer: A
Level of Difficulty: 3
Learning Goal: 4
Topic: Depreciation and Taxes (Equation 8.1)

39. A corporation is selling an existing asset for $1,000. The asset, when purchased, cost $10,000, was being depreciated under MACRS using a five-year recovery period, and has been depreciated for four full years. If the assumed tax rate is 40 percent on ordinary income and capital gains, the tax effect of this transaction is

(a) $0 tax liability.
(b) $1,100 tax liability.
(c) $3,600 tax liability.
(d) $280 tax benefit.

Answer: D
Level of Difficulty: 3
Learning Goal: 4
Topic: Depreciation and Taxes (Equation 8.1)

40. A firm is selling an existing asset for $5,000. The asset, when purchased, cost $10,000, was being depreciated under MACRS using a five-year recovery period and has been depreciated for four full years. If the assumed tax rate is 40 percent on ordinary income and capital gains, the tax effect of this transaction is

(a) $0 tax liability.
(b) $1,320 tax liability.
(c) $1,160 tax liability.
(d) $2,000 tax benefit.

Answer: B
Level of Difficulty: 3
Learning Goal: 4
Topic: Depreciation and Taxes (Equation 8.1)

41. A loss on the sale of an asset that is depreciable and used in business is _____; a loss on the sale of a non-depreciable asset is _____.

(a) deductible from capital gains income; deductible from ordinary income
(b) deductible from ordinary income; deductible only against capital gains
(c) a credit against the tax liability; not deductible
(d) not deductible; deductible only against capital gains

Answer: B
Level of Difficulty: 3
Learning Goal: 4
Topic: Depreciation and Taxes

42. A corporation has decided to replace an existing asset with a newer model. Two years ago, the existing asset originally cost $30,000 and was being depreciated under MACRS using a five-year recovery period. The existing asset can be sold for $25,000. The new asset will cost $75,000 and will also be depreciated under MACRS using a five-year recovery period. If the assumed tax rate is 40 percent on ordinary income and capital gains, the initial investment is _____.

(a) $42,000
(b) $52,440
(c) $54,240
(d) $50,000

Answer: C
Level of Difficulty: 4
Learning Goal: 4
Topic: Initial Investment (Equation 8.1)

43. A corporation has decided to replace an existing asset with a newer model. Two years ago, the existing asset originally cost $70,000 and was being depreciated under MACRS using a five-year recovery period. The existing asset can be sold for $30,000. The new asset will cost $80,000 and will also be depreciated under MACRS using a five-year recovery period. If the assumed tax rate is 40 percent on ordinary income and capital gains, the initial investment is _____.

(a) $48,560
(b) $44,360
(c) $49,240
(d) $27,600

Answer: A
Level of Difficulty: 4
Learning Goal: 4
Topic: Initial Investment (Equation 8.1)

44. Benefits expected from proposed capital expenditures must be on an after-tax basis because

(a) taxes are cash outflows.
(b) no benefits may be used by the firm until tax claims are satisfied.
(c) there may also be tax benefits to be evaluated.
(d) it is common, accepted practice to do so.

Answer: B
Level of Difficulty: 2
Learning Goal: 5
Topic: Relevant Cash Flows

45. One basic technique used to evaluate after-tax operating cash flows is to

(a) add noncash charges to net income.
(b) subtract depreciation from operating revenues.
(c) add cash expenses to net income.
(d) subtract cash expenses from noncash charges.

Answer: A
Level of Difficulty: 2
Learning Goal: 5
Topic: Operating Cash Flows

Computer Disk Duplicators, Inc. has been considering several capital investment proposals for the year beginning in 2004. For each investment proposal, the relevant cash flows and other relevant financial data are summarized in the table below. In the case of a replacement decision, the total installed cost of the equipment will be partially offset by the sale of existing equipment. The firm is subject to a 40 percent tax rate on ordinary income and on long-term capital gains. The firm's cost of capital is 15 percent.

Table 8.3

	Proposal		
Type of Capital	**1**	**2**	**3**
Budgeting Decision	**Expansion**	**Replacement**	**Replacement**
Type of Project	**Independent**	**Mutually Exclusive with 3**	**Mutually Exclusive with 2**
Cost of new asset	$1,500,000	$200,000	$300,000
Installation costs	$0	$0	$15,000
MACRS (new asset)	10 years	5 years	5 years
Original cost of old asset	N/A*	$80,000	$100,000
Purchase date (old asset)	N/A	1/1/97	1/1/2000
Sale proceeds (old asset)	N/A	$50,000	$120,000
MACRS (old asset)	N/A	5 years	5 years
Annual net profits before depreciation & taxes (old)	N/A	$30,000	$25,000
Annual net profits before depreciation & taxes (new)	$250,000	$100,000	$175,000

*Not applicable

46. For Proposal 1, the cash flow pattern for the expansion project is (See Table 8.3.)
(a) a mixed stream and conventional.
(b) a mixed stream and non-conventional.
(c) an annuity and conventional.
(d) an annuity and non-conventional.

Answer: A
Level of Difficulty: 3
Learning Goal: 5
Topic: Expansion Project Analysis

47. For Proposal 1, the initial outlay equals _____. (See Table 8.3.)
(a) $1,380,000
(b) $1,440,000
(c) $1,500,000
(d) $1,620,000

Answer: C
Level of Difficulty: 3
Learning Goal: 5
Topic: Initial Outlay

48. For Proposal 1, the depreciation expense for year 1 is _____. (See Table 8.3.)
(a) $110,400
(b) $115,200
(c) $150,000
(d) $300,000

Answer: C
Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Depreciation

49. For Proposal 1, the annual incremental after-tax cash flow from operations for year 1 is _____. (See Table 8.3.)
(a) $60,000
(b) $255,000
(c) $300,000
(d) $210,000

Answer: D
Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Operating Cash Flows

50. For Proposal 2, the cash flow pattern for the replacement project is (See Table 8.3.)
(a) a mixed stream and conventional.
(b) a mixed stream and non-conventional.
(c) an annuity and conventional.
(d) an annuity and non-conventional.

Answer: A
Level of Difficulty: 3
Learning Goal: 5
Topic: Conventional versus Nonconventional Cash Flows

51. For Proposal 2, the book value of the existing asset is _____. (See Table 8.3.)
(a) $13,600
(b) $34,400
(c) $66,400
(d) $80,000

Answer: A
Level of Difficulty: 3
Learning Goal: 5
Topic: Depreciation and Taxes (Equation 8.1)

52. For Proposal 2, the tax effect on the sale of the existing asset results in (See Table 8.3.)
    (a) $12,000 tax liability.
    (b) $14,560 tax liability.
    (c) $25,280 tax liability.
    (d) $16,600 tax liability.

    Answer: B
    Level of Difficulty: 3
    Learning Goal: 5
    Topic: Depreciation and Taxes (Equation 8.1)

53. For Proposal 2, the initial outlay equals (See Table 8.3.)
    (a) $120,720 cash outflow.
    (b) $164,560 cash outflow.
    (c) $150,000 cash outflow.
    (d) $167,520 cash outflow.

    Answer: B
    Level of Difficulty: 3
    Learning Goal: 5
    Topic: Initial Outlay

54. For Proposal 2, the incremental depreciation expense for year 2 is _____. (See Table 8.3.)
    (a) $16,800
    (b) $26,400
    (c) $38,400
    (d) $60,000

    Answer: D
    Level of Difficulty: 3
    Learning Goal: 5
    Topic: Incremental Depreciation

55. For Proposal 2, the annual incremental after-tax cash flow from operations for year 2 is _____. (See Table 8.3.)
    (a) $18,000
    (b) $24,000
    (c) $66,000
    (d) $84,000

    Answer: C
    Level of Difficulty: 3
    Learning Goal: 5
    Topic: Incremental Operating Cash Flows

56. For Proposal 3, the cash flow pattern for the replacement project is (See Table 8.3.)
(a) a mixed stream and conventional.
(b) a mixed stream and non-conventional.
(c) an annuity and conventional.
(d) an annuity and non-conventional.
Answer: A
Level of Difficulty: 3
Learning Goal: 5
Topic: Replacement Project Analysis

57. For Proposal 3, the book value of the existing asset is _____. (See Table 8.3.)
(a) $21,000
(b) $43,000
(c) $52,000
(d) $80,000
Answer: D
Level of Difficulty: 3
Learning Goal: 5
Topic: Depreciation and Taxes (Equation 8.1)

58. For Proposal 3, the tax effect on the sale of the existing asset results in (See Table 8.3.)
(a) $8,000 tax liability.
(b) $16,000 tax liability.
(c) $20,000 tax liability.
(d) $23,200 tax liability.
Answer: B
Level of Difficulty: 3
Learning Goal: 5
Topic: Depreciation and Taxes (Equation 8.1)

59. For Proposal 3, the initial outlay equals _____. (See Table 8.3.)
(a) $170,400
(b) $211,000
(c) $196,000
(d) $300,000
Answer: B
Level of Difficulty: 3
Learning Goal: 5
Topic: Initial Outlay

60. For Proposal 3, the incremental depreciation expense for year 3 is _____. (See Table 8.3.)
(a) $21,000
(b) $42,000
(c) $47,850
(d) $50,850
Answer: C
Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Depreciation

61. For Proposal 3, the incremental depreciation expense for year 6 is _____. (See Table 8.3.)
(a) $15,750
(b) $10,750
(c) $23,000
(d) $36,150

Answer: A
Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Depreciation

62. For Proposal 3, the annual incremental after-tax cash flow from operations for year 3 is _____. (See Table 8.3.)
(a) $45,000
(b) $75,150
(c) $90,150
(d) $109,140

Answer: D
Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Operating Cash Flows

Table 8.4

Cuda Marine Engines, Inc. must develop the relevant cash flows for a replacement capital investment proposal. The proposed asset costs $50,000 and has installation costs of $3,000. The asset will be depreciated using a five-year recovery schedule. The existing equipment, which originally cost $25,000 and will be sold for $10,000, has been depreciated using an MACRS five-year recovery schedule and three years of depreciation has already been taken. The new equipment is expected to result in incremental before-tax net profits of $15,000 per year. The firm has a 40 percent tax rate.

63. The cash flow pattern for the capital investment proposal is (See Table 8.4.)
(a) a mixed stream and conventional.
(b) a mixed stream and non-conventional.
(c) an annuity and conventional.
(d) an annuity and non-conventional.

Answer: A
Level of Difficulty: 3
Learning Goal: 5
Topic: Conventional versus Nonconventional Cash Flows

64. The book value of the existing asset is _____. (See Table 8.4.)
(a) $7,250
(b) $15,000
(c) $21,250
(d) $25,000

Answer: A
Level of Difficulty: 3
Learning Goal: 5
Topic: Depreciation and Taxes (Equation 8.1)

65. The tax effect on the sale of the existing asset results in (See Table 8.4.)
(a) $800 tax benefit.
(b) $1,000 tax liability.
(c) $1,100 tax liability.
(d) $6,000 tax liability.

Answer: C
Level of Difficulty: 3
Learning Goal: 5
Topic: Depreciation and Taxes (Equation 8.1)

66. The initial outlay equals _____. (See Table 8.4.)
(a) $41,100
(b) $44,100
(c) $38,800
(d) $38,960

Answer: B
Level of Difficulty: 3
Learning Goal: 5
Topic: Initial Investment

67. The incremental depreciation expense for year 1 is _____. (See Table 8.4.)
(a) $2,250
(b) $7,600
(c) $7,000
(d) $7,950

Answer: B
Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Depreciation

68. The incremental depreciation expense for year 5 is _____. (See Table 8.4.)
(a) $2,250
(b) $5,110
(c) $7,950
(d) $6,360

Answer: D
Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Depreciation

69. The annual incremental after-tax cash flow from operations for year 1 is _____. (See Table 8.4.)

(a) $13,950
(b) $16,600
(c) $25,600
(d) $30,000

Answer: B
Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Operating Cash Flows

70. A corporation is evaluating the relevant cash flows for a capital budgeting decision and must estimate the terminal cash flow. The proposed machine will be disposed of at the end of its usable life of five years at an estimated sale price of $15,000. The machine has an original purchase price of $80,000, installation cost of $20,000, and will be depreciated under the five-year MACRS. Net working capital is expected to decline by $5,000. The firm has a 40 percent tax rate on ordinary income and long-term capital gain. The terminal cash flow is

(a) $24,000.
(b) $16,000.
(c) $14,000.
(d) $26,000.

Answer: B
Level of Difficulty: 4
Learning Goal: 6
Topic: Terminal Cash Flows (Equation 8.1)

71. A corporation is evaluating the relevant cash flows for a capital budgeting decision and must estimate the terminal cash flow. The proposed machine will be disposed of at the end of its usable life of five years at an estimated sale price of $2,000. The machine has an original purchase price of $80,000, installation cost of $20,000, and will be depreciated under the five-year MACRS. Net working capital is expected to decline by $5,000. The firm has a 40 percent tax rate on ordinary income and long-term capital gain. The terminal cash flow is

(a) $5,800.
(b) $7,800.
(c) $8,200.
(d) $6,200.

Answer: C
Level of Difficulty: 4
Learning Goal: 6
Topic: Terminal Cash Flows (Equation 8.1)

72. All of the following are motives for capital budgeting expenditures except
    (a) expansion.
    (b) replacement.
    (c) renewal.
    (d) invention.

    Answer: D
    Level of Difficulty: 2
    Learning Goal: 1
    Topic: Motives for Capital Budgeting Expenditures

73. All of the following are steps in the capital budgeting process except
    (a) implementation.
    (b) follow-up.
    (c) transformation.
    (d) decision-making.

    Answer: C
    Level of Difficulty: 2
    Learning Goal: 1
    Topic: Steps in Capital Budgeting Process

74. The evaluation of capital expenditure proposals to determine whether they meet the firm's minimum acceptance criteria is called
    (a) the ranking approach.
    (b) an independent investment.
    (c) the accept-reject approach.
    (d) a mutually exclusive investment.

    Answer: C
    Level of Difficulty: 2
    Learning Goal: 2
    Topic: Accept-Reject versus Ranking Approaches

75. The ordering of capital expenditure projects on the basis of some predetermined measure such as the rate of return is called
    (a) the ranking approach.
    (b) an independent investment.
    (c) the accept-reject approach.
    (d) a mutually exclusive investment.

    Answer: A
    Level of Difficulty: 2
    Learning Goal: 2
    Topic: Accept-Reject versus Ranking Approaches

76. Cash outlays that had been previously made and have no effect on the cash flows relevant to a current decision are called
    (a) incremental historical costs.
    (b) incremental past expenses.
    (c) opportunity costs foregone.
    (d) sunk costs.

    Answer: D
    Level of Difficulty: 2
    Learning Goal: 3
    Topic: Sunk Costs

77. Cash flows that could be realized from the best alternative use of an owned asset are called
    (a) incremental costs.
    (b) lost resale opportunities.
    (c) opportunity costs.
    (d) sunk costs.

    Answer: C
    Level of Difficulty: 2
    Learning Goal: 3
    Topic: Sunk Costs

78. In international capital budgeting decisions, political risks can be minimized using all of the following strategies except
    (a) structuring the investment as a joint venture and selecting well-connected local partner.
    (b) structuring the financing of such investments as equity rather than as debt.
    (c) structuring the financing of such investments as debt rather than as equity.
    (d) None of the above.

    Answer: B
    Level of Difficulty: 3
    Learning Goal: 3
    Topic: International Capital Budgeting

79. The portion of an asset's sale price that is above its book value and below its initial purchase price is called
    (a) a capital gain.
    (b) recaptured depreciation.
    (c) a capital loss.
    (d) book value.

    Answer: B
    Level of Difficulty: 3
    Learning Goal: 4
    Topic: Depreciation and Taxes (Equation 8.1)

80. The portion of an asset's sale price that is below its book value and below its initial purchase price is called
    (a) a capital gain.
    (b) recaptured depreciation.
    (c) a capital loss.
    (d) book value.

    Answer: C
    Level of Difficulty: 3
    Learning Goal: 4
    Topic: Depreciation and Taxes (Equation 8.1)

81. If accounts receivable increase by $1,000,000, inventory decreases by $500,000, and accounts payable increase by $500,000, net working capital would
    (a) decrease by $500,000.
    (b) increase by $1,500,000.
    (c) increase by $2,000,000.
    (d) experience no change.

    Answer: D
    Level of Difficulty: 3
    Learning Goal: 4
    Topic: Net Working Capital Investment

82. All of the following would be used in the computation of an investment's initial investment except
    (a) the annual after tax inflow expected from the investment.
    (b) the initial purchase price of the investment.
    (c) the resale value of an old asset being replaced.
    (d) the tax on the sale of an old asset being replaced.

    Answer: A
    Level of Difficulty: 2
    Learning Goal: 4
    Topic: Initial Investment

■ Essay Questions

1. Compute the initial purchase price for an asset with book value of $34,800 and total accumulated depreciation of $85,200.

   Answer: Initial purchase price = book value + accumulated depreciation = 34,800 + 85,200 = $120,000

   Level of Difficulty: 2
   Learning Goal: 4
   Topic: Depreciation (Equation 8.1)

2. A mixer was purchased two years ago for $120,000 and can be sold for $125,000 today. The mixer has been depreciated using the MACRS 5-year recovery period and the firm pays 40 percent taxes on both ordinary income and capital gain.
   (a) Compute recaptured depreciation and capital gain (loss), if any.
   (b) Find the firm's tax liability.

Answers:

(a) Book Value = 120,000 (1 – 0.20 – 0.32) = $57,600

Recaptured depreciation	= 120,000 – 57,600	= $62,400
Capital gain	= 125,000 – 120,000	= 5,000
		$67,400

(b) Tax liability = 67,400 × 0.40 = $26,960

Level of Difficulty: 3
Learning Goal: 4
Topic: MACRS Depreciation and Taxes (Equation 8.1)

3. An asset was purchased three years ago for $100,000 and can be sold for $40,000 today. The asset has been depreciated using the MACRS 5-year recovery period and the firm pays 40 percent taxes on both ordinary income and capital gain.

(a) Compute recaptured depreciation and capital gain (loss), if any.

(b) Find the firm's tax liability.

Answers:

(a) Book Value = 100,000 (1 – 0.20 – 0.32 – 0.19) = $29,000

Recaptured depreciation = 40,000 – 29,000	= $11,000
Capital gain	= 0
	$11,000

(b) Tax liability = 11,000 × 0.40 = $4,400

Level of Difficulty: 3
Learning Goal: 4
Topic: MACRS Depreciation and Taxes (Equation 8.1)

4. A machine was purchased two years ago for $120,000 and can be sold for $50,000 today. The machine has been depreciated using the MACRS 5-year recovery period and the firm pays 40 percent taxes on both ordinary income and capital gains.

(a) Compute recaptured depreciation and capital gain (loss), if any.

(b) Find the firm's tax liability.

Answers:

(a) Book Value = 120,000 (1 – 0.20 – 0.32) = $57,600

Recaptured depreciation	= $0
Capital loss = 57,600 – 50,000	= 7,600

(b) Tax benefit = 7,600 × 0.40 = $3,040

Level of Difficulty: 3
Learning Goal: 4
Topic: MACRS Depreciation and Taxes (Equation 8.1)

5. Compute the depreciation values for an asset which costs $55,000 and requires $5,000 in installation costs using MACRS 5-year recovery period.

Answer: Depreciable Value = 55,000 + 5,000 = $60,000

Year	Depreciable Value	Percentages	Depreciation Values
1	$60,000	20%	$12,000
2	60,000	32	19,200
3	60,000	19	11,400
4	60,000	12	7,200
5	60,000	12	7,200
6	60,000	5	3,000
			$60,000

Level of Difficulty: 3
Learning Goal: 4
Topic: MACRS Depreciation (Equation 8.1)

Table 8.5

Fine Press is considering replacing the existing press with a more efficient press. The new press costs $55,000 and requires $5,000 in installation costs. The old press was purchased 2 years ago for an installed cost of $35,000 and can be sold for $20,000 net of any removal costs today. Both presses are depreciated under the MACRS 5-year recovery schedule. The firm is in 40 percent marginal tax rate.

6. Calculate the book value of the existing press being replaced. (See Table 8.5.)

Answer: Book value of existing press = $35,000 × [1 – (0.20 + 0.32)] = 16,800

Level of Difficulty: 3
Learning Goal: 4
Topic: Initial Investment, MACRS Depreciation and Taxes (Equation 8.1)

7. Calculate the tax effect from the sale of the existing asset. (See Table 8.5.)

Answer: Tax:
$20,000 – 16,800 = $3,200 recaptured depreciation
$3,200 × 0.40 = $1,280 tax

Level of Difficulty: 3
Learning Goal: 4
Topic: Initial Investment, MACRS Depreciation and Taxes (Equation 8.1)

8. Calculate the initial investment of the new asset. (See Table 8.5.)

Answer:

Cost of new press	$55,000
Installation Cost	5,000
Proceeds from the sale of existing press	–20,000
Tax effect on sale of existing press	1,280
Initial investment	$41,280

Level of Difficulty: 3
Learning Goal: 4
Topic: Initial Investment, MACRS Depreciation and Taxes (Equation 8.1)

Degnan Dance Company, Inc., a manufacturer of dance and exercise apparel, is considering replacing an existing piece of equipment with a more sophisticated machine. The following information is given.

Table 8.6

Facts	
Existing Machine	**Proposed Machine**
Cost = $100,00	Cost = $150,000
Purchased 2 years ago	Installation = $20,000
Depreciation using MACRS over 5-year recovery schedule	Depreciation—the MACRS a 5-year recover schedule will be used.
Current market value = $105,000	
Five year usable life remaining	Five year usable life expected

Earnings before Depreciation and Taxes					
Existing Machine			**Proposed Machine**		
Year	1	$160,000	Year	1	$170,000
	2	150,000		2	170,000
	3	140,000		3	170,000
	4	140,000		4	170,000
	5	140,000		5	170,000

The firm pays 40 percent taxes on ordinary income and capital gains.

9. Calculate the book value of the existing asset being replaced. (See Table 8.6.)

Answer: Book value of existing equipment = $100,000 × [1 – (0.20 + 0.32)] = 48,000

Level of Difficulty: 3
Learning Goal: 5
Topic: MACRS Depreciation (Equation 8.1)

10. Calculate the tax effect from the sale of the existing asset. (See Table 8.6.)

Answer: Tax:

$105,000 – $100,000 = $5,000 capital gain	× 0.4	= $2,000
$ 52,000 recaptured depreciation	× 0.4	= 20,800
Total tax liability		$22,800

Level of Difficulty: 3
Learning Goal: 5
Topic: MACRS Depreciation and Taxes (Equation 8.1)

11. Calculate the initial investment required for the new asset. (See Table 8.6.)

Answer:

Cost of new equipment	$150,000
Installation cost	20,000
Proceeds from the sale of existing equipment	(105,000)
Tax effect on sale of existing equipment	22,800
Initial investment	$ 87,800

Level of Difficulty: 3
Learning Goal: 5
Topic: Initial Investment

12. Calculate the incremental earnings before depreciation and taxes. (See Table 8.6.)

Answer:

Year	
1	$10,000
2	20,000
3	30,000
4	30,000
5	30,000

Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental EBDT

13. Calculate the incremental depreciation. (See Table 8.6.)

Answer:

Year	
1	$15,000
2	42,400
3	20,300
4	15,400
5	20,400
6	8,500

Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Depreciation

14. Summarize the incremental after-tax cash flow (relevant cash flows) for years t = 0 through t = 5. (See Table 8.6.)

Answer:

Calculation of Operating Cash Flows

Year	Profits before Depreciation and Taxes	Depreciation	Net Profits before Taxes	Taxes	Net Profits After Taxes	Cash Flow
Existing Machine						
1	$160,000	$19,000	$141,000	$56,400	$84,600	$103,600
2	150,000	12,000	138,000	55,200	82,800	94,800
3	140,000	12,000	128,000	51,200	76,800	88,800
4	140,000	5,000	135,000	54,000	81,000	86,000
5	140,000	0	140,000	56,000	84,000	84,000
6	0	0	0	0	0	0
Proposed Machine						
1	$170,000	$34,000	$136,000	$54,400	$81,600	$115,600
2	170,000	54,400	115,600	46,240	69,360	123,760
3	170,000	32,300	137,700	55,080	82,620	114,920
4	170,000	20,400	149,600	59,840	89,760	110,160
5	170,000	20,400	149,600	59,840	89,760	110,160
6	0	8,500	–8,500	3,400	–5,100	3,400

Calculation of Incremental Cash Flows

Year	Proposed	Existing	Incremental
1	$115,600	$103,600	$12,000
2	123,760	94,800	28,960
3	114,920	88,800	26,120
4	110,160	86,000	24,160
5	110,160	84,000	26,160
6	3,400	0	3,400

Level of Difficulty: 3
Learning Goal: 5
Topic: Incremental Cash Flows

15. Should financing costs such as the returns paid to bondholders and stockholders be considered in computing after tax operating cash flows? Why or why not?

Answer: 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.

Level of Difficulty: 2
Learning Goal: 3
Topic: Relevant Cash Flows

16. Please explain the difference between a sunk cost and an opportunity cost and give an example of each type of cost

Answer: There is no one correct answer to this question. A correct answer depends upon the student's response.

Level of Difficulty: 2
Learning Goal: 3
Topic: Sunk Costs versus Opportunity Costs