MULTIPLE CHOICE

1. The capital budgeting process involves
   a. identifying potential investments
   b. analyzing the set of investment opportunities, and identifying those that will create
      shareholder value
   c. implementing and monitoring the selected investment projects
   d. all of the above
   
   ANS: D  DIF: E  REF: Introduction

2. The preferred technique for evaluating most capital investments is
   a. payback period
   b. discount payback period
   c. internal rate of return
   d. net present value
   
   ANS: D  DIF: E  REF: 8.1 Introduction to Capital Budgeting

NARRBEGIN: Gamma Electronics

Gamma Electronics

Gamma Electronics is considering the purchase of testing equipment that will cost $500,000 to replace
old equipment. Assume the new machine will generate after-tax savings of $250,000 per year over the
next four years.

NARREND

3. Refer to Gamma Electronics. What’s the payback period for the investment?
   a. 1.8 years
   b. 2.0 years
   c. 2.5 years
   d. 2.8 years
   
   ANS: B  DIF: E  REF: 8.3 Payback Methods  NAR: Gamma Electronics

   The investment requires $500,000. In its first two years, this investment generates $500,000.

4. Refer to Gamma Electronics. If the firm has a 15% cost of capital, what’s the discount payback period
   of the investment?
   a. 1.5 years
   b. 2.0 years
   c. 2.4 years
   d. 2.6 years
   
   ANS: D  DIF: E  REF: 8.3 Payback Methods  NAR: Gamma Electronics

   Present value
   
   PV of Year 1 = 250,000/1.15 = 217,391
   PV of Year 2 = 250,000/1.15^2 = 189,036
   PV of Year 3 = 250,000/1.15^3 = 164,379

   By the end of year 3, the project produces a cumulative cash flow that’s greater than $500,000. Thus
   the project earns back the initial $500,000 at some point during the third year.
(500,000 - 217,391 - 189,036)/164,379 = 93,573/164,379 = 0.569

The discount payback period is 2.6 years.

DIF: M  REF:  8.3 Payback Methods  NAR: Gamma Electronics

5. If Gamma Electronics has a 15% cost of capital, what’s the NPV of the investment?
   a. $213,745  
   b. $185,865  
   c. $713,745  
   d. $500,000

ANS: A
NPV = -500,000 + 250,000/1.15 + 250,000/1.15² + 250,000/1.15³ + 250,000/1.15⁴ = 213,745

DIF: E  REF:  8.4 Net Present Value  NAR: Gamma Electronics

6. If Gamma Electronics has a 15% cost of capital, what’s the IRR of the investment?
   a. 23.4%  
   b. 15.0%  
   c. 34.9%  
   d. 100.0%

ANS: C
Let r represent the IRR of the investment.
-500,000 + 250,000/(1+r) + 250,000/(1+r)² + 250,000/(1+r)³ + 250,000/(1+r)⁴ = 0
r = 34.9%

DIF: E  REF:  8.5 Internal Rate of Return  NAR: Gamma Electronics

7. If Gamma Electronics has a 15% cost of capital, what’s the profitability index of the investment?
   a. 1.4  
   b. 0.4  
   c. 2.0  
   d. 1.0

ANS: A
(250,000/1.15 + 250,000/1.15² + 250,000/1.15³ + 250,000/1.15⁴)/500,000 = 713,745/500,000 = 1.4

DIF: E  REF:  8.6 Profitability Index  NAR: Gamma Electronics

NARRBEGIN: Exhibit 8-1 Invst Csh Prj
Exhibit 8-1
The cash flows associated with an investment project are as follows:

Cash Flows
Initial Outflow  -$70,000
Year 1  $20,000
Year 2  $30,000
Year 3  $30,000
Year 4  $30,000

NARREND
8. Refer to Exhibit 8-1. What’s the payback period of the project? If a firm’s cutoff payback period is 3 years, should it accept the project?
   a. 2.7 years; reject the project
   b. 2.7 years; accept the project
   c. 3.6 years; reject the project
   d. 3.6 years; accept the project

   ANS: B
   By the end of year 3, the project produces a cumulative cash flow of $80,000. Thus the project earns back the initial $70,000 at some point during the third year.

   \[(70,000 - 20,000 - 30,000)/30,000 = 0.67\]

   The project’s payback period is 2.7 years.

   The firm should invest in the project.

   DIF: E   REF: 8.3 Payback Methods   NAR: Exhibit 8-1 Invst Csh Prj

9. Refer to Exhibit 8-1. If a firm uses discounted payback with a 15% discount rate and a 3-year cutoff period, what’s the discount payback period of the project? Should the firm accept the project?
   a. 3.3 years; reject
   b. 3.6 years; reject
   c. 3.6 years; accept
   d. 2.7 years; accept

   ANS: B
   Cumulative PV at end of year 3 = \(20,000/1.15 + 30,000/1.15^2 + 30,000/1.15^3 = 59,801\)

   Cumulative PV at end of year 4 = \(20,000/1.15 + 30,000/1.15^2 + 30,000/1.15^3 + 30,000/1.15^4 = 76,954\)

   By the end of year 4, the project produces a cumulative discounted cash flow of $76,954. Thus the project earns back the initial $70,000 at some point during the fourth year.

   \[(70,000 - 59,801)/(76,954 - 59,801) = 0.6\]

   The discount payback period is 3.6 years.

   DIF: M   REF: 8.3 Payback Methods   NAR: Exhibit 8-1 Invst Csh Prj

10. Flaws of the accounting rate of return method include:
   a. the choice of accounting hurdle return rate is essentially arbitrary
   b. depreciation method has a large impact on the accounting rate of return
   c. this method makes no adjustment for project risk or for the time value of money
   d. all of the above

   ANS: A   DIF: M   REF: 8.2 Accounting-Based Methods

NARRBEGIN: Exhibit 8-2

**Exhibit 8-2**

A piece of equipment costs $1.2m. The equipment has a useful life of 4 years. In each of the four years, the investment generates a cash inflow of $0.5m. The impact of the investment project on net income is derived by subtracting depreciation from cash flow each year.

NARREND
11. Refer to Exhibit 8-2. Assume the equipment is depreciated on a straight-line basis over 4 years, what is the average contribution to net income across all four years?
   a. $0.2m
   b. $0.5m
   c. $0.3m
   d. $0.8m

   ANS: A
   Depreciation charge per year = 1.2m/4 = 0.3m
   Net income per year = 0.5m - 0.3m = 0.2m

   DIF: M REF: 8.2 Accounting-Based Methods NAR: Exhibit 8-2

12. Refer to Exhibit 8-2. The project’s average accounting rate of return equals the average contribution to net income divided by the average book value of the investment.

   Assume the equipment is depreciated on a straight-line basis over 4 years, what is the average accounting rate of return?
   a. 16.7%
   b. 33.3%
   c. 66.7%
   d. Cannot tell from the given information

   ANS: B
   Depreciation charge per year = 1.2m/4 = 0.3m
   Net income per year = 0.5m - 0.3m = 0.2m
   Average book value = 0.6m
   Average accounting rate of return = 0.2m/0.6m = 33.3%

   DIF: M REF: 8.2 Accounting-Based Methods NAR: Exhibit 8-2

13. Suppose a particular investment project will generate an immediate cash inflow of $1,000,000 followed by cash outflows of $500,000 in each of the next three years. What is the project’s IRR?

   Suppose a company’s hurdle rate is 15%, should it accept the project?
   a. 23%; reject the project
   b. 23%; accept the project
   c. 15%; reject the project
   d. 15%; accept the project

   ANS: A
   Let r represent the IRR of the investment.

   \[
   1,000,000 - 500,000/(1+r) + 500,000/(1+r)^2 + 500,000/(1+r)^3 = 0
   \]
   \[
   r = 23\%
   \]

   The project has an initial cash inflow and subsequent cash outflows, and its IRR is higher than the hurdle rate, should reject the project.

   DIF: M REF: 8.5 Internal Rate of Return

14. Suppose a particular investment project will require an initial cash outlay of $1,000,000 and will generate a cash inflow of $500,000 in each of the next three years. What is the project’s IRR?

   Suppose a company’s hurdle rate is 15%, should it accept the project?
   a. 23%; reject the project
b. 23%; accept the project

c. 15%; reject the project

d. 15%; accept the project

ANS: B

Let r represent the IRR of the investment.

\[-1,000,000 + \frac{500,000}{1+r} + \frac{500,000}{(1+r)^2} + \frac{500,000}{(1+r)^3} = 0\]

\[r = 23\%\]

IRR is higher than the hurdle rate, should accept the project.

DIF: M   REF: 8.5 Internal Rate of Return

15. Future Semiconductors is evaluating a new etching tool. The equipment costs $1.0m and will generate after-tax cash inflows of $0.4m per year for six years. Assume the firm has a 15% cost of capital. What’s the NPV of the investment?

a. $0.51m
b. $0.45m
c. $1.51m
d. $1.69m

ANS: A

NPV = \(-1 + \frac{0.4}{1.15} + \frac{0.4}{1.15^2} + \frac{0.4}{1.15^3} + \frac{0.4}{1.15^4} + \frac{0.4}{1.15^5} + \frac{0.4}{1.15^6}\) = $0.51m

DIF: M   REF: 8.4 Net Present Value

16. Should a firm invest in projects with NPV = $0?

a. Yes
b. No
c. The firm is indifferent between accepting or rejecting projects with zero NPVs
d. The firm should look at the PI and IRR of the projects

ANS: C   DIF: M   REF: 8.4 Net Present Value

17. A firm has 10 million shares outstanding with a current market price of $20 per share. There is one investment project available to the firm. The initial investment of the project is $20 million, and the NPV of the project is $10 million. What will be the firm’s stock price if capital markets fully reflect the value of undertaking the project?

a. $19
b. $20
c. $21
d. $22

ANS: C

The stock price will increase by $1 per share (= $10m/10m shares)

DIF: M   REF: 8.4 Net Present Value

18. Delta Pharmaceuticals has 200 million shares outstanding with a current market price of $30 per share. Its stock rose to $32 on the news that Delta Pharmaceuticals’ long waited new drug Zentac is to hit the market next month. What’s the market’s consensus of the NPV that the new drug will generate for Delta Pharmaceuticals?

a. $400 million
b. $6,400 million
c. $6,000 million  
d. None of the above

ANS: A  
The stock price increased by $2 per share.

\[ \text{NPV} = \frac{2}{\text{share}} \times 200 \text{m shares} = $400 \text{m} \]

DIF: M  
REF: 8.5 Internal Rate of Return

19. Kelley Industries has 100 million shares of common stock outstanding with a current market price of $50. The firm is contemplating to take an investment project which requires an initial cash outflow of $100 million. The IRR of the project is equal to the firm’s cost of capital. What will be the firm’s stock price if capital markets fully reflect the value of undertaking the project?
   a. $50  
   b. $49  
   c. $51  
   d. Cannot tell from the given information

ANS: A  
The NPV of the project is zero since the project’s IRR equals the cost of capital. So there is no change in stock price.

DIF: M  
REF: 8.5 Internal Rate of Return

20. Consider a project with the following cash flows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-$16,000</td>
</tr>
<tr>
<td>1</td>
<td>42,000</td>
</tr>
<tr>
<td>2</td>
<td>-27,000</td>
</tr>
</tbody>
</table>

What’s the IRR of the project? If a firm’s cost of capital is 15%, should the firm accept the project?
   a. 50%; accept the project  
   b. 12.5%; reject the project  
   c. 12.5% and 50%; accept the project  
   d. 12.5%, and 50%; reject the project

ANS: C  
Let \( r \) represent the IRR of the investment.

\[ -16,000 + \frac{42,000}{(1+r)} - \frac{27,000}{(1+r)^2} = 0 \]
\[ r_1 = 12.5\%, \ r_2 = 50\% \]

When \( r = 15\% \), the NPV of the project is greater than 0, should accept the project

DIF: M  
REF: 8.5 Internal Rate of Return

21. Consider a project with the following stream of cash flows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Flow ($ in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>+80</td>
</tr>
<tr>
<td>1</td>
<td>-388</td>
</tr>
<tr>
<td>2</td>
<td>+700</td>
</tr>
<tr>
<td>3</td>
<td>-557</td>
</tr>
</tbody>
</table>
What’s the IRR of the project? If a firm’s cost of capital is 15%, should the firm accept the project?

a. 10%, 25%, 50%; accept the project
b. 10%, 25%, 50%; reject the project
c. 0%, 10%, 25%, 50%; accept the project
d. 10%, 25%; accept the project

ANS: C

A simple way to solve this problem is to take all the IRRs given in the answer choices and to see whether the IRRs will make the NPV of the project equal to zero.

The NPV of the cash flow at discount rate of 15% is has a positive value of $0.01m, should accept the project.

DIF: H

Refer to Exhibit 8-3 Invst Prpsals

Exhibit 8-3

A firm is evaluating two investment proposals. The following data is provided for the two investment alternatives.

<table>
<thead>
<tr>
<th>Initial cash outflow</th>
<th>IRR</th>
<th>NPV(@18%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1</td>
<td>$250m</td>
<td>28%</td>
</tr>
<tr>
<td>Project 2</td>
<td>$ 50m</td>
<td>36%</td>
</tr>
</tbody>
</table>

NARRBEGIN: Exhibit 8-3 Invst Prpsals

22. Refer to Exhibit 8-3. If the two projects are independent, which project should the firm choose based on the IRR rule?

a. project 1
b. project 2
c. both projects
d. cannot decide because the hurdle rate is unknown

ANS: C

The hurdle rate is equal to the discount rate in the NPV calculation, which is 18%. Both projects pass the hurdle rate.

DIF: M

23. Refer to Exhibit 8-3. If the two projects are mutually exclusive, which project should the firm choose? What is the problem that the firm should be concerned with in making this decision?

a. project 1; discount rate
b. project 2; discount rate
c. project 1; project scale
d. project 2; project scale

ANS: C

Both projects pass the hurdle rate of 18%, and project 1 has higher NPV. The firm should be concerned with the scale problem that occurs when using IRR as a decision rule.

DIF: H
24. Kelley Industries is evaluating two investment proposals. The scale of Project 1 is roughly 4 times that of the Project 2. The following data is provided for the two investment alternatives.

<table>
<thead>
<tr>
<th>Project</th>
<th>IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1</td>
<td>28%</td>
</tr>
<tr>
<td>Project 2</td>
<td>50%</td>
</tr>
<tr>
<td>Incremental project</td>
<td>26%</td>
</tr>
</tbody>
</table>

If the two projects are mutually exclusive, and the firm’s hurdle rate is 18%, which project should the firm choose?

a. project 1
b. project 2
c. the incremental project
d. both projects

ANS: A
Both projects and the incremental project pass the hurdle rate of 18%, and project 1 is of bigger scale, should invest in project 1.

DIF: M      REF: 8.5 Internal Rate of Return

25. A project may have multiple IRRs when
a. the project generates an alternating series of net cash inflows and outflows
b. the project generates an immediate cash inflow followed by cash outflow
c. the project has a negative NPV
d. the project is of considerably large scale

ANS: A      DIF: E      REF: 8.5 Internal Rate of Return

26. The IRR method assumes that the reinvestment rate of cash flows is
a. the cost of capital
b. the IRR
c. essentially arbitrary
d. zero

ANS: B      DIF: H      REF: 8.5 Internal Rate of Return

27. Potential problems in using the IRR as a capital budgeting technique include:

a. the timing problem
b. multiple IRRs
c. the scale problem
d. all of the above

ANS: D      DIF: M      REF: 8.5 Internal Rate of Return

NARRBEGIN: Thompson Manufacturing

**Thompson Manufacturing**

Thompson Manufacturing is considering two investment proposals. The first involves a quality improvement project, and the second is about an advertising campaign. The cash flows associated with each project appear below.

<table>
<thead>
<tr>
<th>Quality Improvement</th>
<th>Advertising Campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial cash outflow</td>
<td>$100,000</td>
</tr>
<tr>
<td>Cash Inflows</td>
<td>$100,000</td>
</tr>
</tbody>
</table>
28. Refer to Tompson Manufacturing. Suppose the hurdle rate of the firm is 10%. Calculate the cash flows of the “incremental project” by subtracting the cash flows of the second project from the cash flows of the first project. What is the IRR of the incremental project?
   a. 20.7%
   b. 23.1%
   c. 17.9%
   d. 10.0%
   ANS: C
   Cash flow of the incremental project:

<table>
<thead>
<tr>
<th>Year</th>
<th>Incremental Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>-70,000</td>
</tr>
<tr>
<td>2</td>
<td>-15,000</td>
</tr>
<tr>
<td>3</td>
<td>115,000</td>
</tr>
</tbody>
</table>

   Let \( r \) represent the IRR of the incremental project.
   
   \[-70,000/(1+r) -15,000/(1+r)^2 + 115,000/(1+r)^3 = 0\]
   
   \( r = 17.9\% \)

   DIF: M    REF: 8.5 Internal Rate of Return    NAR: Thompson Manufacturing

29. Refer to Tompson Manufacturing. Suppose the hurdle rate of the firm is 10%. If the two projects are mutually exclusive, which project should be chosen? What is the problem that the firm should be concerned with in making this decision?
   a. Quality improvement project; project scales
   b. Advertising campaign; project scales
   c. Quality improvement project; the timing of cash flows
   d. Advertising campaign; the timing of cash flows
   e. Advertising campaign; discount rate
   ANS: C
   Cash flow of the incremental project (quality improvement - advertising campaign):

<table>
<thead>
<tr>
<th>Year</th>
<th>Incremental Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>-70,000</td>
</tr>
<tr>
<td>2</td>
<td>-15,000</td>
</tr>
<tr>
<td>3</td>
<td>115,000</td>
</tr>
</tbody>
</table>

   Let \( r \) represent the IRR of the incremental project.
   
   \[-70,000/(1+r) -15,000/(1+r)^2 + 115,000/(1+r)^3 = 0\]
   
   \( r = 17.9\% \)

   Incremental project IRR passes the hurdle rate, should invest in the quality improvement project.

   DIF: M    REF: 8.5 Internal Rate of Return    NAR: Thompson Manufacturing
30. An entrepreneur is offered a service contract that will cost him $600,000 initially. The contract has a 5 years of life and will generate an after tax cash inflow of $160,000 per year. The cost of capital of this project is 12%. What’s the NPV of the project? Should the entrepreneur accept the contract?
   a. $-23,236; reject
   b. $23,236; accept
   c. $-20,746; reject
   d. $576,764; reject
   e. $41,050; accept
   ANS: A
   NPV = -$600,000 + $160,000/1.12 + $160,000/1.12^2 + $160,000/1.12^3 + $160,000/1.12^4 + $160,000/1.12^5
        = $-23,236

31. The following information is given on three mutually exclusive projects. Assume a cost of capital of 15%. Which project has the highest PI?

<table>
<thead>
<tr>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1</td>
<td>Project 2</td>
<td>Project 3</td>
<td></td>
</tr>
<tr>
<td>-$400,000</td>
<td>-$500,000</td>
<td>-$1,000,000</td>
<td></td>
</tr>
<tr>
<td>200,000</td>
<td>300,000</td>
<td>500,000</td>
<td></td>
</tr>
<tr>
<td>300,000</td>
<td>300,000</td>
<td>700,000</td>
<td></td>
</tr>
<tr>
<td>300,000</td>
<td>350,000</td>
<td>700,000</td>
<td></td>
</tr>
</tbody>
</table>

   a. Project 1
   b. Project 2
   c. Project 3
   d. All projects
   ANS: A
   PI (project 1) = PV of CF(year 1-3) / initial outlay = 598,011/400,000 = 1.495
   PI (project 2) = PV of CF(year 1-3) / initial outlay = 717,843/500,000 = 1.436
   PI (project 3) = PV of CF(year 1-3) / initial outlay = 1,424,345/1,000,000 = 1.424

   DIF: M   REF: 8.6 Profitability Index

32. You are provided with the following data on two mutually exclusive projects. The cost of capital is 15%.

<table>
<thead>
<tr>
<th>Initial cash outflow</th>
<th>Year 1 cash inflow</th>
<th>Year 2 cash inflow</th>
<th>NPV</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1</td>
<td>-$5,000</td>
<td>$5,000</td>
<td>$2,500</td>
<td>$1,238</td>
</tr>
<tr>
<td>Project 2</td>
<td>-$1,000</td>
<td>$1,000</td>
<td>$850</td>
<td>$512</td>
</tr>
</tbody>
</table>

   Which project should you accept? What is the problem that you should be concerned with in making this decision?
   a. Project 1; the timing of cash flows
   b. Project 2; the timing of cash flows
   c. Project 1; project scale
   d. Project 2; project scale
   ANS: C
Project 1 has higher NPV than project 2, though project 1 has a lower PI. You should be concerned with the project scale problem in making this decision.

DIF: M REF: 8.6 Profitability Index

33. The profitability index is most useful
   a. when the NPV method and the IRR method give conflicting signals on mutually exclusive projects
   b. in capital rationing situations
   c. when the cash flow pattern is unusual
   d. when project scales are of concern

ANS: B DIF: E REF: 8.6 Profitability Index

34. You have a $1 million capital budget and must make the decision about which investments your firm should undertake for the coming year. There are three projects available and the cash flows of each project appear below. Assume a cost of capital of 12%. Which project or projects do you select?

<table>
<thead>
<tr>
<th>Year</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-$400,000</td>
<td>-$500,000</td>
<td>-$1,000,000</td>
</tr>
<tr>
<td>1</td>
<td>200,000</td>
<td>300,000</td>
<td>500,000</td>
</tr>
<tr>
<td>2</td>
<td>300,000</td>
<td>350,000</td>
<td>700,000</td>
</tr>
<tr>
<td>3</td>
<td>300,000</td>
<td>350,000</td>
<td>700,000</td>
</tr>
</tbody>
</table>

a. Project 1
b. Project 2
c. Project 3
d. Project 1 & Project 2

ANS: D

PI (project 1) = PV of CF(year 1-3) / initial outlay = 631,264/400,000 = 1.58
PI (project 2) = PV of CF(year 1-3) / initial outlay = 795,998/500,000 = 1.59
PI (project 3) = PV of CF(year 1-3) / initial outlay = 1502,710/1,000,000 = 1.50

Begin by accepting the project with the highest PI, then continue to accept additional projects until bump into the $1 million capital constraint. Also, the sum of NPV of project 1 and project 2 is greater than the NPV of project 3.

DIF: M REF: 8.6 Profitability Index

35. You must know the discount rate of an investment project to compute its
   a. NPV, IRR, PI, and discount payback period
   b. NPV, PI, discount payback period
   c. NPV, PI, IRR
   d. NPV, accounting rate of return, PI, discount payback period

ANS: B DIF: M REF: 8.4 Net Present Value, 8.5 Internal Rate of Return, 8.6 Profitability Index

36. You must know all the cash flows of an investment project to compute its
   a. NPV, IRR, PI, and discount payback period
   b. NPV, IRR, PI, payback period, and discount payback period,
   c. NPV, PI, IRR
   d. NPV, accounting rate of return, IRR, PI
The figure below shows the NPV profile for two investment projects.

37. Refer to NPV Profile. What’s the IRR for project 1?
   a. 12%
   b. 14%
   c. 18%
   d. Cannot tell from the given information

   ANS: B  DIF: E  REF: 8.5 Internal Rate of Return
   NAR: NPV Profile

38. Refer to NPV Profile. What’s the IRR for project 2?
   a. 12%
   b. 14%
   c. 18%
   d. Cannot tell from the given information

   ANS: C  DIF: E  REF: 8.5 Internal Rate of Return
   NAR: NPV Profile

39. Refer to NPV Profile. The NPV of which project is more sensitive to the discount rate?
   a. Project 1
   b. Project 2
   c. Equally sensitive
   d. Cannot tell from the given information

   ANS: A  DIF: M  REF: 8.5 Internal Rate of Return
   NAR: NPV Profile

40. Refer to NPV Profile. Suppose the two projects require about the same initial investment. Which project generates more cash flows in the early years?
   a. Project 1
   b. Project 2
c. There is no difference between the two projects
d. Cannot tell from the given information

ANS: B
DIF: M
REF: 8.5 Internal Rate of Return
NAR: NPV Profile

41. Refer to NPV Profile. If Gamma Company has a hurdle rate of 11%, and the two projects are independent, which project should Gamma Company invest?
a. Project 1
b. Project 2
c. Both project 1 and project 2.
d. Neither project

ANS: C
DIF: M
REF: 8.5 Internal Rate of Return
NAR: NPV Profile

42. Refer to NPV Profile. If the hurdle rate is 11%, and the two projects are mutually exclusive, which project should be accepted?
a. Project 1
b. Project 2
c. Both projects
d. Neither project

ANS: A
DIF: M
REF: 8.5 Internal Rate of Return
NAR: NPV Profile

43. Refer to NPV Profile. If the hurdle rate is 13%, and the two projects are mutually exclusive, which project should be accepted?
a. Project 1
b. Project 2
c. Both projects
d. Neither project

ANS: B
DIF: M
REF: 8.5 Internal Rate of Return
NAR: NPV Profile

44. Refer to NPV Profile. If the hurdle rate is 19%, and the two projects are independent, which project should be accepted?
a. Project 1
b. Project 2
c. Both projects
d. Neither project

ANS: D
DIF: M
REF: 8.5 Internal Rate of Return
NAR: NPV Profile

45. Capital investment is also known as:
a. capital budgeting.
b. capital hedging.
c. capital spending.
d. capital savings.

ANS: C
DIF: E
REF: Introduction

46. The process of identifying which long-lived investment projects a firm should undertake is known as:
a. capital spending.
47. Capital budgeting techniques should:
   a. full account for expected risk and return.
   b. recognize the time value of money.
   c. lead to higher stock prices when applied.
   d. all of the above.

ANS: D  DIF: M  REF: 8.1 Introduction to Capital Budgeting

48. The accounting rate of return is calculated as:
   a. sales/stock price
   b. net income/stock price
   c. sales/book value of assets
   d. net income/book value of assets

ANS: D  DIF: E  REF: 8.2 Accounting-Based Methods

49. The accounting rate of return:
   a. uses net cash flows.
   b. does not take into account the time value of money.
   c. uses an objectively determined hurdle rate.
   d. all of the above.

ANS: B  DIF: M  REF: 8.2 Accounting-Based Methods

50. The main virtue of the payback method is its:
   a. simplicity.
   b. complexity.
   c. completeness.
   d. thoroughness.

ANS: A  DIF: E  REF: 8.3 Payback Methods

51. The payback method:
   a. fails to explicitly consider the time value of money.
   b. is the amount of time it takes for a project to recoup its profits.
   c. is the best method for evaluating complex projects.
   d. is never used by businesses today.

ANS: A  DIF: M  REF: 8.3 Payback Methods

52. A problem with the payback method is:
   a. it assigns a 0 percent discount rate to cash flows that occur before the cutoff point.
   b. it assigns a 10 percent discount rate to cash flows that occur before the cutoff point.
   c. it assigns a 20 percent discount rate to cash flows that occur before the cutoff point.
   d. it assigns a 30 percent discount rate to cash flows that occur before the cutoff point.

ANS: A  DIF: E  REF: 8.3 Payback Methods

53. As the discount rate increases, the NPV of a project:
   a. increases.
b. decreases.
c. is unaffected.
d. cannot be determined without knowing the discount rate.

ANS: B  DIF: M  REF: 8.4 Net Present Value

54. As the discount rate increases, the IRR of a project:
   a. increases.
b. decreases.
c. is unaffected.
d. cannot be determined without knowing the discount rate.

ANS: C  DIF: M  REF: 8.5 Internal Rate of Return

55. The NPV method focuses on:
    a. sales.
b. accounting returns.
c. profits.
d. cash flows.

ANS: D  DIF: M  REF: 8.4 Net Present Value

56. The IRR method focuses on:
    a. sales.
b. accounting returns.
c. profits.
d. cash flows.

ANS: D  DIF: M  REF: 8.5 Internal Rate of Return

57. Which method directly estimates the change in shareholder wealth?
   a. Payback
   b. IRR
   c. NPV
   d. PI

ANS: C  DIF: M  REF: 8.4 Net Present Value

58. When the IRR is equal to the discount rate, the NPV is:
    a. positive.
b. equal to zero.
c. negative.
d. cannot be determined without knowing the discount rate.

ANS: B  DIF: M  REF: 8.5 Internal Rate of Return

59. The IRR is analogous to:
    a. a bond’s current yield.
b. a stock’s dividend yield.
c. a bond’s yield-to-maturity.
d. a stock’s yield to maturity.

ANS: C  DIF: M  REF: 8.5 Internal Rate of Return

60. The compound annual return on a project is known as its:
    a. NPV.
b. PI.
c. payback.
d. IRR.

ANS: D DIF: M REF: 8.5 Internal Rate of Return

61. The hurdle rate used in IRR analysis should be:
a. the risk-free rate.
b. the current corporate bond rate.
c. the prime rate.
d. the discount rate used in NPV analysis.

ANS: D DIF: M REF: 8.5 Internal Rate of Return

62. Which of the following is a problem with the Internal Rate of Return?
a. appropriate adjustment for the time value of money
b. focus on cash flows
c. multiple IRRs
d. all of the above are problems with the Internal Rate of Return

ANS: C DIF: M REF: 8.5 Internal Rate of Return

63. NPV and IRR may give conflicting decisions for mutually exclusive projects because:
a. the risk of the projects may differ.
b. the scale of the projects may differ.
c. the discount rates on the projects may differ.
d. all of the above.

ANS: B DIF: M REF: 8.5 Internal Rate of Return

64. The NPV method is most likely to be used in:
a. large firms.
b. publicly traded firms.
c. firms run by CFOs with MBAs.
d. all of the above.

ANS: D DIF: M REF: 8.7 Which Techniques Do Firms Actually Use?

65. The payback method is more likely to be used by:
a. younger CFOs.
b. older CFOs.
c. CFOs without an MBA
d. b. and c.

ANS: D DIF: M REF: 8.7 Which Techniques Do Firms Actually Use?

NARRBEGIN: Commerce Company
Commerce Company

The Commerce Company is evaluating a project with the following cash flows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>$ 5,000</td>
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</tbody>
</table>
What is the payback period of the proposed Commerce Company project?

- a. 1.5 years
- b. 2.7 years
- c. 3.2 years
- d. 4.5 years

ANS: C
3 + 1000/5000 = 3.2 years.

What is the net present value of the proposed Commerce Company project if the discount rate is 7%?

- a. $10,000
- b. $9,347
- c. $6,921
- d. $5,847

ANS: D

<table>
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<tbody>
<tr>
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<td>5</td>
<td>$ 6,000</td>
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</tbody>
</table>

I/YR = 7%
NPV = $5,487

What is the profitability index of the proposed Commerce Company project if the discount rate is 7%?

- a. .58
- b. 1.58
- c. 2.58
- d. 3.58

ANS: B

<table>
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<tbody>
<tr>
<td>0</td>
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<td>$ 6,000</td>
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</tbody>
</table>

NPV of CF1 - CF5 @ 7% = $15,487

PI = $15,487/$10,000 = 1.58
69. What is the IRR of the proposed Commerce Company project?
   a. 7.00%
   b. 15.24%
   c. 23.29%
   d. 42.85%
   ANS: C

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</table>

   IRR = 23.29%

70. What is the discounted payback period of the proposed Commerce Company project if the discount rate is 7%?
   a. 3.09 years
   b. 3.19 years
   c. 3.39 years
   d. 3.59 years
   ANS: D

<table>
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<th>Year</th>
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<th>Dis. CF</th>
<th>Cum. CF</th>
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<td>($10,000)</td>
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</table>

   3 + 2,245.33/3814.48 = 3.59 years.
3  $ 5,000
4  $ 6,000
5  $ 7,000

NARREND

71. What is the payback period of the proposed Swerling Company project?
a. 1.28 years  
b. 2.28 years  
c. 3.28 years  
d. 4.28 years

ANS: D  
4 + 2000/7000 = 4.28 years.

DIF: E  
REF: 8.3 Payback Methods  
NAR: Swerling Company

72. What is the net present value of the proposed Swerling Company project if the discount rate is 6%?
a. $572  
b. $1,572  
c. $10,572  
d. $100,572

ANS: A  

<table>
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<td>0</td>
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<td>5</td>
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</table>

I/YR = 6%

NPV = $572

DIF: M  
REF: 8.4 Net Present Value  
NAR: Swerling Company

73. What is the profitability index of the proposed Swerling Company project if the discount rate is 6%?
a. .03  
b. 1.03  
c. 2.03  
d. 3.03

ANS: B

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<td>5</td>
<td>$ 7,000</td>
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</tbody>
</table>

NPV of CF1 - CF5 @ 6% = $20,572
PI = $20,572/$20,000 = 1.03

74. What is the IRR of the proposed Swerling Company project?
   a. 9.57%
   b. 8.35%
   c. 7.72%
   d. 6.91%

   ANS: D

<table>
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<th>Year</th>
<th>Cash Flow</th>
<th>IRR = 6.91%</th>
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75. What is the discounted payback period of the proposed Swerling Company project if the discount rate is 6%?
   a. 6.89 years
   b. 5.89 years
   c. 3.89 years
   d. 4.89 years

   ANS: D

<table>
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<th>Cum. CF</th>
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<td>$      571.64</td>
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   4 + 4,659.17/5,230.81 = 4.89 years.