

## Question #1 of 21

Question ID: 1575457

Which of the following examples *best* represents a flexibility option?

- A) In three years, a company can invest \$500 million to increase the size of its project by 40%. 
- B) In two years, a company can cease operating a factory if the present value of production is negative. 
- C) In one year, a company can increase the price of its product by up to 30% if demand rises. 

### Explanation

A *flexibility option* gives the holder the right to make future operational decisions regarding price and production. Flexibility relates to overtime pay, input materials, prices charged, and the type of products produced.

The answer option referencing a \$500 million investment is an example of an *expansion (growth) option*, which gives a company the right to make additional investments in future projects if the projects will create value.

The answer option referencing a company ceasing operating a factory is an example of an *abandonment option*, which gives a company the right to abandon a project in the future if the NPV of the project is negative.

(Module 26.2, LOS 26.d)

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## Question #2 of 21

Question ID: 1575456

A real option can:

- A) never have a negative value. 
- B) have a negative value only if it is not exercised. 
- C) have a negative value only if a project's net present value (NPV) is negative. 

### Explanation

Real options represent rights, but not obligations, to the option holders. As a result, they can never have negative values because the option holders could simply walk away from (not exercise) their option.

If a project's NPV is negative, the real option would have zero value.

(Module 26.2, LOS 26.d)

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### Question #3 of 21

Question ID: 1573323

The CFO of Axis Manufacturing is evaluating the introduction of a new product. The costs of a recently completed marketing study for the new product and the possible increase in the sales of a related product made by Axis are best described (respectively) as:

- A) opportunity cost; externality. 
- B) externality; cannibalization. 
- C) sunk cost; externality. 

#### Explanation

The study is a sunk cost, and the possible increase in sales of a related product is an example of a positive externality.

(Module 26.2, LOS 26.c)

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### Question #4 of 21

Question ID: 1575455

Following a significant and persistent increase in nickel prices, a mine operator decides to open a new nickel mine in Canada. Opening the mine is *best* characterized as:

- A) an expansion option. 
- B) a fundamental option. 
- C) a flexibility option. 

#### Explanation

*Fundamental options* are real options where the project (in this case, the nickel mine) itself is the option. The company has the flexibility to mine or not mine the product, in part based on the price of the product.

*Expansion options* give a company the right to make additional investments in future projects if the projects will create value.

*Flexibility options* give a company the right to increase or decrease the price of a product or production volumes in the future.

(Module 26.2, LOS 26.d)

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A firm is reviewing an investment opportunity that requires an initial cash outlay of \$336,875 and promises to return the following irregular payments:

Year 1: \$100,000

Year 2: \$82,000

Year 3: \$76,000

Year 4: \$111,000

Year 5: \$142,000

If the required rate of return for the firm is 8%, what is the net present value of the investment?

A) \$64,582.



B) \$99,860.



C) \$86,133.



#### Explanation

To determine the net present value of the investment, given the required rate of return, we can discount each cash flow to its present value, sum the present value, and subtract the required investment.

Year	Cash Flow	PV of Cash flow at 8%
0	-336,875.00	-336,875.00
1	100,000.00	92,592.59
2	82,000.00	70,301.78
3	76,000.00	60,331.25
4	111,000.00	81,588.31
5	142,000.00	96,642.81
Net Present Value		64,581.74

(Module 26.1, LOS 26.b)

Johnson's Jar Lids is deciding whether to begin producing jars. Johnson's pays a consultant \$50,000 for market research that concludes Johnson's sales of jar lids will increase by 5% if it also produces jars. In choosing the cash flows to include when evaluating a project to begin producing jars, Johnson's should:

- A) include both the cost of the market research and the effect on the sales of jar lids. 
- B) include the cost of the market research and exclude the effect on the sales of jar lids. 
- C) exclude the cost of the market research and include the effect on the sales of jar lids. 

### Explanation

Sunk costs should be excluded from cash flows, as they are costs that cannot be avoided even if the project is not undertaken. Externalities, such as positive or negative effects of accepting a project on sales of the company's existing products, should be included in the cash flows. (Module 26.2, LOS 26.c)

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### Question #7 of 21

Question ID: 1575459

A movie studio spends \$15 million to buy the rights to a novel that will allow the studio to produce a movie based on this novel in the future. Which of the following real options *best* characterizes this scenario?

- A) Flexibility option. 
- B) Fundamental option. 
- C) Expansion option. 

### Explanation

*Expansion (growth) options* give companies the right to make additional investments in future projects (like producing a movie based on the novel) if the projects will create value.

*Flexibility options* give the holder the right to make future operational decisions regarding factors like price, overtime pay, input materials, and the type of products produced.

*Fundamental options* are real options where the project itself is the option. The payoff to the project depends on the price of the underlying asset.

(Module 26.2, LOS 26.d)

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## Question #8 of 21

Question ID: 1573316

Fisher, Inc., is evaluating the benefits of investing in a new industrial printer. The printer will cost \$28,000 and increase after-tax cash flows by \$7,000 during each of the next four years and \$6,000 in each of the two years after that. The internal rate of return (IRR) of the printer project is *closest* to:

A) 11.6%.



B) 11.8%.



C) 12.0%.



### Explanation

$CF_0 = -\$28,000$ ;  $CF_1 = \$7,000$ ;  $F_1 = 4$ ;  $CF_2 = \$6,000$ ;  $F_2 = 2$ ; CPT  $\rightarrow$  IRR = 11.6175%.

(Module 26.1, LOS 26.b)

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## Question #9 of 21

Question ID: 1573313

A company is considering a \$10,000 project that will last 5 years.

- Annual after tax cash flows are expected to be \$3,000
- Cost of capital = 9.7%

What is the project's net present value (NPV)?

A) +\$1,460.



B) -\$1,460.



C) +\$11,460.



### Explanation

*Calculate the PV of the project cash flows*

$$N = 5, PMT = -3,000, FV = 0, I/Y = 9.7, CPT \rightarrow PV = 11,460$$

*Calculate the project NPV by subtracting out the initial cash flow*

$$NPV = \$11,460 - \$10,000 = \$1,460$$

(Module 26.1, LOS 26.b)

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## Question #10 of 21

Question ID: 1573325

Which of the following is *least* relevant in determining project cash flow for a capital investment?

- A) Sunk costs. 
- B) Opportunity costs. 
- C) Tax impacts. 

### Explanation

Sunk costs are not to be included in investment analysis. Opportunity costs and the project's impact on taxes are relevant variables in determining project cash flow for a capital investment. (Module 26.2, LOS 26.c)

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## Question #11 of 21

Question ID: 1573311

With respect to capital investments, the greatest amount of detailed analysis is typically required when deciding whether to:

- A) replace a functioning machine with a newer model to reduce costs. 
- B) address safety-related concerns. 
- C) introduce a new product or develop a new market. 

### Explanation

Introducing a new product or entering a new market involves sales and expense projections that can be highly uncertain, and therefore require the greatest degree of detailed analysis. Addressing safety or regulatory concerns or replacing old machinery typically involve less uncertainty and do not require the same depth of analysis as developing a new product or entering a new market.

(Module 26.1, LOS 26.a)

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## Question #12 of 21

Question ID: 1573321

Which of the following steps is *least likely* to be a step in the capital allocation process?

- A) Arranging financing for capital projects. 
- B) Conducting a post-audit to identify errors in the forecasting process. 
- C) Forecasting cash flows and analyzing project profitability. 

## Explanation

Arranging financing is not one of the administrative steps in the capital budgeting process. The four administrative steps in the capital budgeting process are:

1. Idea generation
2. Analyzing project proposals
3. Creating the firm-wide capital budget
4. Monitoring decisions and conducting a post-audit

(Module 26.1, LOS 26.b)

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## Question #13 of 21

Question ID: 1573315

The financial manager at Genesis Company is looking into the purchase of an apartment complex for \$550,000. Net after-tax cash flows are expected to be \$65,000 for each of the next five years, then drop to \$50,000 for four years. Genesis' required rate of return is 9% on projects of this nature. After nine years, Genesis Company expects to sell the property for after-tax proceeds of \$300,000. What is the internal rate of return on this project?

A) 7.01%.



B) 6.66%.



C) 13.99%.



## Explanation

$CF_0 = -\$550,000$ ;  $CF_1 = \$65,000$ ;  $F_1 = 5$ ;  $CF_2 = \$50,000$ ;  $F_2 = 3$ ;  $CF_3 = \$350,000$ ;  $F_3 = 1$ . CPT IRR = 7.0152. Note that the cash flows in year 9 have to be netted to calculate the IRR correctly.

(Module 26.1, LOS 26.b)

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## Question #14 of 21

Question ID: 1573320

An investment is purchased at a cost of \$775,000 and returns \$300,000 at the end of years 2 and 3. At the end of year 4 the investment receives a final payment of \$400,000. The IRR of this investment is *closest* to:

A) 8.65%.



B) 9.45%.



C) 13.20%.



### Explanation

$Cf_0 = -775,000$ ,  $C_01 = 0$ ,  $F_01 = 1$ ,  $C_02 = 300,000$ ,  $F_02 = 2$ ,  $C_03 = 400,000$ ,  $F_03 = 1$ ; IRR = 8.6534.

(Module 26.1, LOS 26.b)

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### Question #15 of 21

Question ID: 1573312

Lincoln Coal is planning a new coal mine, which will cost \$430,000 to build. The mine will bring cash inflows of \$200,000 annually over the next seven years. It will then cost \$170,000 to close down the mine in the following year. Assume all cash flows occur at the end of the year. Alternatively, Lincoln Coal may choose to sell the site today. If Lincoln has a 16% required rate of return, the minimum price they should accept for the property is *closest* to:

A) \$310,000.



B) \$318,000.



C) \$326,000.



### Explanation

The key is first identifying this as a NPV problem. The minimum price the company should accept for selling the property is the net present value of the mine if the company built and operated it.

Next, the year of each cash flow must be property identified; specifically:  $CF_0 = -430,000$ ;  $CF_{1-7} = +\$200,000$ ;  $CF_8 = -\$170,000$ .

Entering these values into the cash flow worksheet:

$CF_0 = -430,000$ ;  $C_01 = 200,000$ ;  $F_01 = 7$ ;  $C_02 = -170,000$ ;  $F_02 = 1$ ;  $I = 16$ ; CPT NPV = 325,858.76

(Module 26.1, LOS 26.b)

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### Question #16 of 21

Question ID: 1573319

Should a company accept a project that has an IRR of 14% and an NPV of \$2.8 million if the cost of capital is 12%?

A) Yes, based on the NPV and the IRR.



B) Yes, based only on the NPV.



C) No, based on the NPV and the IRR.



### Explanation

The project should be accepted on the basis of its positive NPV and its IRR, which exceeds the cost of capital.

(Module 26.1, LOS 26.b)

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### Question #17 of 21

Question ID: 1573322

One of the basic principles of capital allocation is that:

A) decisions are based on cash flows.



B) opportunity costs should be excluded from the analysis of a project.



C) projects should be analyzed on a pre-tax basis.



### Explanation

Key principles of the capital allocation process are:

1. Decisions are based on cash flows, not accounting income.
2. Cash flows are based on opportunity costs.
3. The timing of cash flows is important.
4. Cash flows are analyzed on an after-tax basis.
5. Financing costs are reflected in the project's required rate of return.

(Module 26.2, LOS 26.c)

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### Question #18 of 21

Question ID: 1575458

An auto manufacturer recently introduced new technologies into its production of its popular pickup truck. The new technologies will allow the manufacturer to easily convert its production pickup trucks to electric vehicles in a few years. This choice is *best* characterized as a:

A) growth option.



B) flexibility option.



C) timing option.



## Explanation

A *flexibility option* gives the holder the right to make future operational decisions regarding price and production. Flexibility relates to overtime pay, input materials, prices charged, and the type of products produced—including, in this case, the choice to convert production to electric vehicles.

A *timing option* allows companies to make future decisions regarding timing of investments.

An *expansion (growth) option* gives companies the right to make additional investments in future projects if the projects will create value.

(Module 26.2, LOS 26.d)

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## Question #19 of 21

Question ID: 1573318

If a calculated net present value is negative, the discount rate used is:

- A) greater than the internal rate of return. 
- B) less than the internal rate of return. 
- C) equal to the internal rate of return. 

## Explanation

When  $NPV = 0$ , the discount rate used is equal to the IRR. If a discount rate is used that is higher than the IRR, the NPV will be negative. Conversely, if a discount rate is used that is lower than the IRR, the NPV will be positive.

(Module 26.1, LOS 26.b)

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## Question #20 of 21

Question ID: 1573317

The estimated annual after-tax cash flows of a proposed investment are shown below:

Year 1: \$10,000

Year 2: \$15,000

Year 3: \$18,000

After-tax cash flow from sale of investment at the end of year 3 is \$120,000

The initial cost of the investment is \$100,000, and the required rate of return is 12%. The net present value (NPV) of the project is *closest* to:

- A) \$19,113. 
- B) \$63,000. 
- C) -\$66,301. 

**Explanation**

$$10,000 / 1.12 = 8,929$$

$$15,000 / (1.12)^2 = 11,958$$

$$138,000 / (1.12)^3 = 98,226$$

$$\text{NPV} = 8,929 + 11,958 + 98,226 - 100,000 = \$19,113$$

Alternatively: CFO = -100,000; CF1 = 10,000; CF2 = 15,000; CF3 = 138,000; I = 12; CPT → NPV = \$19,112.

(Module 26.1, LOS 26.b)

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**Question #21 of 21**

Question ID: 1573310

Which of the following types of capital investments are *most likely* to generate little to no revenue?

- A) Going concern projects. 
- B) New product or market development. 
- C) Regulatory projects. 

**Explanation**

Mandatory regulatory or compliance projects may be required by a governmental agency or insurance company and typically involve safety-related or environmental concerns. The projects typically generate little to no revenue, but they accompany other new revenue producing projects and are accepted by the company in order to continue operating.

(Module 26.1, LOS 26.a)