Reading 26

CAPITAL INVESTMENTS & CAPITAL ALLOCATION

1. (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)

2. (A) never have a negative value.

Explanation

Real options represent rights, but not obligations, to the option holders. As a results, 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)

3. (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)

4. (B) a fundamental 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)

5. (A) $64,582.

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)

6. (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)

7. (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)

8. (A) 11.6%.

Explanation

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

(Module 26.1, LOS 26.b)

9. (A) +$1,460.

Explanation

Calculate the PV of the project cash flows

N = 5, PMT = -3,000, FV = 0, I/Y = 9.7, CPT → 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)

10. (A) Sunk costs.

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)

11. (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)

12. (A) Arranging financing for capital projects.

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. Analysing project proposals
3. Creating the firm-wide capital budget
4. Monitoring decisions and conducting a post-audit

(Module 26.1, LOS 26.b)

13. (A) 7.01%.

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)

14. (A) 8.65%.

Explanation

Cf0 = -775,000, C01 = 0, F01 = 1, C02 = 300,000, F02 = 2, C03 = 400,000, F03 = 1; IRR = 8.6534.

(Module 26.1, LOS 26.b)

15. (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; C01 = 200,000; F01 = 7; C02 = –170,000; F02 = 1; I = 16; CPT NPV =325,858.76

(Module 26.1, LOS 26.b)

16. (A) Yes, 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)

17. (A) decisions are based on cash flows.

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 analysed on an after-tax basis.
5. Financing costs are reflected in the project's required rate of return.

(Module 26.2, LOS 26.c)

18 (B) flexibility 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)

19. (A) greater than 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)

20. (A) $19,113.

Explanation

10,000 / 1.12 = 8,929

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

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

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)

21. (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)