CHAPTER 30
COST OF CAPITAL FOUNDATIONAL TOPICS

1. (A) 4.2%.

Explanation

Pretax cost of debt: N = 20; FV = 1000; PV = -894; PMT = 60; CPT -+ IN = 7%

After-tax cost of debt: k_d = (7%)(1 - 0.4) = 4.2%

(Study Session 10, Module 30.1, LOS 30.c)

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2. (B) the preferred stock dividend divided by its market price.

Explanation

The cost of preferred stock = D_{ps} / P.

(Study Session 10, Module 30.1, LOS 30.d)

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3. (C) 12.11%.

Explanation

If the bonds are trading at $98, the required yield is 8.11 %, and the market value of the issue is $3.92 million. To calculate this rate using a financial calculator (and figuring the rate assuming a $100 face value for each bond), N = 4; PMT = 7.5 = (0.075 x 100); FV = 100; PV = -98; CPT → I/Y = 8.11. By adding the equity risk factor of 4%, we compute the cost of equity as 12 11 %.

(Study Session 10, Module 30.1, LOS 30.e)

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4. (B) current market price.

Explanation

The cost of preferred stock, kps, is Dps / price. (Study Session 10, Module 30.1, LOS 30.d)

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5. (C) 10%.

Explanation

Preferred stock pays constant dividends into perpetuity. The price of preferred stock equals the present value of the preferred stock dividends: \$20 = \$2 / k_{ps}. Therefore, the cost of preferred stock capital equals \$2 / \$20 = 0.10 = 10%.

(Study Session 10, Module 30.1, LOS 30.d)

Related Material

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6. (B) 4.4%.

Explanation

Ferryville's cost of debt capital is $k_d(1 - t)$ = 6.8% x (1 - 0.35) = 4.42%. Note that the before-tax

cost of debt is the yield to maturity on the company's outstanding notes, not their coupon rate. If the expected yield on new par debt were known, we would use that. Since it is not, the yield to maturity on existing debt is the best approximation.

(Study Session 10, Module 30.1, LOS 30.c)

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7. (B) fall.

Explanation

Recall the WACC equation:

WACC = $[w_d \times k_d \times (1 - t)] + (w_{ps} \times k_{ps}) + (w_{ce} \times k_s)$

The increase in the corporate tax rate will result in a lower cost of debt, resulting in a lower WACC for the company.

(Study Session 10, Module 30.1, LOS 30.b)

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8. (B) 10.0%.

Explanation

k_{ps} = \$8 / \$80 = 10%

(Study Session 10, Module 30.1, LOS 30.d)

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9. (B) 10.6%.

Explanation

To determine the WACC, the company's cost of debt capital must reflect the tax deductibility of interest costs.

(0.4)(9%)(1 - 0.40) + (0.6)(14%) = 10.56%

(Study Session 10, Module 30.1, LOS 30.a)

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10. (B) 7.4%.

Explanation

The problem must be solved in two steps. First, calculate the cost of equity:

r_{CE} = Rf + P(R_M - Rf)
= 0.04 + 0.9(0.09 - 0.04)
= 0.085 = 8.5%

Next, calculate the WACC.

WACC = $w_D r_D(1 - t) + w_P r_P + W_{CE} r_{CE}$
= (0.30)(0.08)(1 - 0.40) + 0 + (0.70)(0.085)
= 0.0739 or 7.39%

(Study Session 10, Module 30.1, LOS 30.e)

Related Material

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11. (A) 0.632.

Explanation

The unlevered beta for this company is calculated as:

$$\beta_{unlevered} = 1.2\left[\frac{1}{1+(1-0.40)1.5}\right] = 0.6316 \approx 0.632$$

(Study Session 10, Module 30.2, LOS 30.f)

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12. (C) 8.4%.

Explanation

(0.14)(1 - 0.4) = 0.084

(Study Session 10, Module 30.1, LOS 30.c)

Related Material

SchweserNotes - Book 3

13. (A) 10.2%.

Explanation

The capital structure ratios are:

- Debt to total capital = $10 / ($10 + $30) = 25%
- Equity to total capital = $30 / ($10 + $30) = 75%

The formula for the WACC (if no preferred stock) is:

WACC = $w_d k_d(1 - t) + w_{ce} k_{ce}$

where w_d is the percentage of operations financed by debt, w_{ce} is the percentage of operations financed by equity, t is the marginal tax rate, k_d is the before-tax cost of debt, and Ike is the cost of common equity.

WACC = 0.25(0.08)(0.60) + 0.75(0.12) = 0.102 = 10.2%.

(Study Session 10, Module 30.1, LOS 30.a)

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14. (C) **reject profitable, low-risk projects and accept unprofitable, high-risk projects.**

Explanation

The firm will reject profitable, low-risk projects because it will use a hurdle rate that is too high. The firm should lower the required rate of return for lower risk projects. The firm will accept unprofitable, high-risk projects because the hurdle rate of return used will be too low relative to the risk of the project. The firm should increase the required rate of return for high-risk projects.

(Study Session 10, Module 30.1, LOS 30.a)

Related Material

SchweserNotes - Book 3

15. (C) **adjust cash flows in the computation of the project NPV by the dollar amount of the flotation costs.**

Explanation

Adjusting the cost of equity for flotation costs is incorrect because doing so entails adjusting the present value of cash flows by a fixed percentage over the life of the project. In reality, flotation costs are a cash outflow that occurs at the initiation of a project. Therefore, the correct way to account for flotation costs is to adjust the cash flows in the computation of project NPV, not the cost of equity. The dollar amount of the flotation cost should be considered an additional cash outflow at initiation of the project.

(Study Session 10, Module 30.2, LOS 30.g)

Related Material

SchweserNotes - Book 3

16. (A) **less than 5%.**

Explanation

Yield to maturity is an appropriate estimate of a firm's before-tax cost of capital. Its after-tax cost of capital may be estimated as YTM x (1 - tax rate) and will be less than the before-tax cost of capital, as long as the firm faces a positive tax rate, which is the most likely case.

For Further Reference:

(Study Session 10, Module 30.1, LOS 30.c)

CFA® Program Curriculum, Volume 4, page 9

Related Material

SchweserNotes - Book 3

17. (B) **not consider the flotation cost because it is a sunk cost.**

Explanation

The recommended method is to treat flotation costs as a cash outflow at project initiation rather than as a component of the cost of equity.

Related Material

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18. (B) Use the coupon rate on the firm's most recently issued debt.

Explanation

Current market yields, not the coupon rate, should be used to estimate the cost of debt capital.

For Further Reference:

(Study Session 10, Module 30.1, LOS 30.c)

CFA® Program Curriculum, Volume 4, page 9

Related Material

SchweserNotes - Book 3

19. (A) 10.6%.

Explanation

$WACC = (W_d)[K_d (1 - t)] + (W_p)(K_p) + (W_{ce})(K_{ce})$

WACC = 0.4(7.5%)(1 - 0.4) + 0.05(11 %) + 0.55(15%) = 10.6%.

(Study Session 10, Module 30.1, LOS 30.a)

Related Material

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20. (C) 11.6%.

Explanation

Weight of equity = $15 million / ($10 million + $15 million) = 60%

Weight of debt = $10 million I ($10 million + $15 million) = 40%

$WACC = 0.60(k_{CE}) + 0.40(\text{after-tax } k_D)$

WACC = 0.60(0.15) + 0.40(0.10)(1 - 0.35) = 0.09 + 0.026 = 0.116 or 11.6%

(Study Session 10, Module 30.1, LOS 30.a)

Related Material

SchweserNotes - Book 3

21. (A) interest on debt is tax deductible.

Explanation

The cost of debt capital is adjusted for taxes because interest paid by the firm is typically tax deductible. The costs of equity and preferred stock are not adjusted for taxes because dividends are not deductible for corporate taxes. Taxes owed by shareholders do not affect a firm's cost of capital.

(Study Session 10, Module 30.1, LOS 30.b)

Related Material

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22. (A) 5.3%.

Explanation

7.5 x (1 - 0.3) = 5.25%.

(Study Session 10, Module 30.1, LOS 30.c)

Related Material

SchweserNotes - Book 3

23. (A) the dividend yield on the firm's newly-issued preferred stock.

Explanation

The newly-issued preferred shares of most companies generally sell at par. As such, the dividend yield on a firm's newly-issued preferred shares is the market's required rate of return. The yield on a BBB corporate bond reflects a pre-tax cost of debt. Both remaining choices make no sense.

(Study Session 10, Module 30.1, LOS 30.d)

Related Material

SchweserNotes - Book 3

24. (C) 13.0%.

Explanation

A project will be profitable if its internal rate of return exceeds the company's weighted average cost of capital. For this company, WACC = (0.3)(0.1)(1 - 0.4) + (0.2)(0.11) + (0.5)(0.18) = 0 13

(Study Session 10, Module 30.1, LOS 30.a)

Related Material

SchweserNotes - Book 3

25. (A) The firm's corporate tax rate.

Explanation

The corporate tax rate is not a relevant factor when calculating the cost of preferred stock. The cost of preferred stock, kps is expressed as:

$k_{ps} = D_{ps} / P$

where:

D_{ps} = divided per share = dividend rate x stated par value

P = market price

(Study Session 10, Module 30.1, LOS 30.d)

Related Material

SchweserNotes - Book 3

26. (C) increase the cost of capital because of a higher after-tax cost of debt. Explanation

The cost of debt capital is affected by the marginal tax rate because interest costs are tax-deductible. A lower marginal tax rate decreases the value to the firm of the tax deduction for interest and therefore increases the after-tax cost of debt capital. Cost of equity capital is not affected by the marginal tax rate.

(Study Session 10, Module 30.1, LOS 30.b)

Related Material

SchweserNotes - Book 3

27. (A) The coupon rate on the firm's existing debt.

Explanation

Ideally, an analyst would use the YTM of a firm's existing debt as the pretax cost of new debt. When a firm's debt is not publicly traded, however, a market YTM may not be available. In this case, an analyst may use the yield curve for debt with the same rating and maturity to estimate the market YTM. If the anticipated debt has unique characteristics that affect YTM, these characteristics should be accounted for when estimating the pretax cost of debt. The cost of debt is the market interest rate (YTM) on new (marginal) debt, not the coupon rate on the firm's existing debt. If you are provided with both coupon and YTM on the exam, you should use the YTM.

(Study Session 10, Module 30.1, LOS 30.c)

Related Material

SchweserNotes - Book 3

28. (B) equal to the before-tax cost of preferred stock.

Explanation

The after-tax cost of preferred stock is equal to the before-tax cost of preferred stock, because preferred stock dividends are not tax deductible. The cost of preferred shares is usually higher than the cost of debt, but less than the cost of common shares.

(Study Session 10, Module 30.1, LOS 30.d)

Related Material

SchweserNotes - Book 3