1. Consider the following data for the returns on shares of Splash Company and that of the Ice Cream Manufacturing Company (ICMC):

**Event Probability Splash share return (%) ICMC share return (%)**

**Hot weather** 0.2 5 30

**Modestly warm** 0.6 15 15

**Cold weather** 0.2 20 2

1.0

**Required:**

**a.** Calculate the expected return and standard deviation for each share.

**b.** An investor is considering investing in both shares in the following proportion: 80% in ICMC and 20% in Splash Company. Calculate the expected returns of this portfolio investment.

**c.** Calculate the standard deviation of the portfolio if the correlation coefficient (ρ) between Splash and ICMC is -0.25.

1. Nova Inc. is interested in measuring its overall cost of capital. The tax rate of the firm is currently 40%. The needed financial information and data are as follows:

**Debt:** Nova can raise debt by selling $1,000-par-value, 6.5% coupon interest rate, 10-year bonds on which *annual interest payments* will be made. Since the market interest is higher than the coupon rate, to sell the issue, an average discount of $20 per bond needs to be given. There is an associated flotation cost of 2% of par value.

**Preferred stock:** Preferred stock can be sold under the following terms: The security has a par value of $100 per share, the annual dividend rate is 6% of the par value, and the flotation cost is expected to be $4 per share. The preferred stock is expected to sell for $102 before cost considerations.

**Common stock:** The current price of Nova’s common stock is $35 per share. The cash dividend is expected to be $3.25 per share next year. The firm’s dividends have grown at an annual rate of 5%, and it is expected that the dividend will continue at this rate for the foreseeable future. The flotation costs are expected to be approximately $2 per share. Nova can sell new common stock under these terms.

**Retained earnings:** The firm expects to have available $100,000 of retained earnings in the coming year. Once these retained earnings are exhausted, the firm will use new common stock as the form of common stock equity financing.

The market value of the long-term debt is $1,767,500, preferred stock is $1,414,000 and common stock equity valued to $1,868,500.

**[N.B: Total capital raised is the sum of long term debt, preferred stock and common stock, which is $1,767,500+$1,414,000+$1,868,500= $5,050,000.**

**so, weight of debt would be, W*i*=Market value of long term debt ÷ Total capital raised= $1,767,500 ÷ $5,050,000 = 0.35 or 35%.**

**Similarly you can calculate the weight of preferred stock and weight of common stock]**

**Required**:

**a.** Calculate the after-tax cost of debt.

**b.** Calculate the cost of preferred stock.

**c.** Calculate the cost of retained earnings.

**d.** Calculate the cost of new common stock.

**e.** Calculate the firm’s weighted average cost of capital using retained earnings.

**f.** Calculate the firm’s weighted average cost of capital using new common stock.

1. Hook Industries is considering the replacement of one of its old drill presses. Three alternative replacement presses are under consideration. The relevant cash flows associated with each are shown in the following table. The firm’s weighted average cost of capital is 15%.

**Press A Press B Press C**

**Initial investment (*CF*0) $85,000 $60,000 $130,000**

**Year (*t*) Cash inflows (*CFt*)**

 1 $18,000 $12,000 $50,000

 2 18,000 14,000 30,000

 3 18,000 16,000 20,000

 4 18,000 18,000 20,000

 5 18,000 20,000 20,000

 6 18,000 25,000 30,000

 7 18,000 — 40,000

 8 18,000 — 50,000

**Required:**

1. Calculate the payback period for each press.
2. According to the payback period, in which press the firm should invest?

**c.** Calculate the *net present value (NPV)* of each press.

**d.** Using NPV, evaluate the acceptability of each press. Assume: the press are mutually exclusive.

**e.** Using NPV, evaluate the acceptability of each press. Assume: the press are independent