

Module 2: Time Value of Money in Finance (Practice)

Question 1:

An investor has three options for receiving payments from an investment: Option 1: a single payment of \$136,000 today; Option 2: 30 annual payments of \$12,000, beginning one year from today; Option 3: 20 annual payments of \$13,000, beginning today. If the annual discount rate is 8%, the option with the highest present value is:

- A. Option 1.
 - B. Option 2.
 - C. Option 3.
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Question 2:

An investor needs to make the following payments to cover college tuition fees, starting 10 years from today:

Annual fee (payable at the beginning of each year)	\$50,000
Number of years of fee payments	4

If the investor's annual discount rate is 3%, the minimum investment amount required today to fund all four years of college tuition is closest to:

- A. \$138,294.
 - B. \$142,442.
 - C. \$146,716.
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Question 3:

An investment requires 10 equal annual payments, starting today, and will pay out a lump sum of \$500,000 15 years from today. If the interest rate is 4% per year compounded annually, the required annual payment is closest to:

- A. \$32,913.
 - B. \$34,230.
 - C. \$40,044.
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Question 4:

An investment pays \$1,000 annually for five years, with the first payment occurring three years from today. If the discount rate is 6% compounded annually, the present value of the investment today is closest to:

- A. \$3,537.
 - B. \$3,749.
 - C. \$4,212.
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Question 5:

Grupo Ignacia issued 10-year corporate bonds two years ago. The bonds pay an annualized coupon of 10.7 percent on a semiannual basis, and the current annualized YTM is 11.6 percent. The current price of Grupo Ignacia's bonds (per MXN100 of par value) is closest to:

- A. MXN95.47.
 - B. MXN97.18.
 - C. MXN95.39.
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Question 6:

Grey Pebble Real Estate seeks a fully amortizing fixed-rate five-year mortgage loan to finance 75 percent of the purchase price of a residential building that costs NZD5 million. The annual mortgage rate is 4.8 percent. The monthly payment for this mortgage would be closest to:

- A. NZD70,424.
 - B. NZD93,899.
 - C. NZD71,781.
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Question 7:

Mylandia Corporation pays an annual dividend to its shareholders, and its most recent payment was CAD2.40. Analysts following Mylandia expect the company's dividend to grow at a constant rate of 3 percent per year in perpetuity. Mylandia shareholders require a return of 8 percent per year. The expected share price of Mylandia is closest to:

- A. CAD48.00.
 - B. CAD49.44.
 - C. CAD51.84.
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Question 8:

Suppose Mylandia announces that it expects significant cash flow growth over the next three years, and now plans to increase its recent CAD2.40 dividend by 10 percent in each of the next three years. Following the 10 percent growth period, Mylandia is expected to grow its annual dividend by a constant 3 percent indefinitely. Mylandia's required return is 8 percent. Based upon these revised expectations, The expected share price of Mylandia stock is:

- A. CAD49.98.
 - B. CAD55.84.
 - C. CAD59.71.
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Question 9:

Consider a Swiss Confederation zero-coupon bond with a par value of CHF100, a remaining time to maturity of 12 years and a price of CHF89. In three years' time, the bond is expected to have a price of CHF95.25. If purchased today, the bond's expected annualized return is closest to:

- A. 0.58 percent.
 - B. 1.64 percent.
 - C. 2.29 percent.
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Question 10:

Grupo Ignacia issued 10-year corporate bonds four years ago. The bonds pay an annualized coupon of 10.7 percent on a semiannual basis, and the current price of the bonds is MXN97.50 per MXN100 of par value. The YTM of the bonds is closest to:

- A. 11.28 percent.
 - B. 11.50 percent.
 - C. 11.71 percent.
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Question 11:

Mylandia Corporation stock trades at CAD60.00. The company pays an annual dividend to its shareholders, and its most recent payment of CAD2.40 occurred yesterday. Analysts following Mylandia expect the company's dividend to grow at a constant rate of 3 percent per year. Mylandia's required return is:

- A. 8.00 percent.
 - B. 7.00 percent.
 - C. 7.12 percent.
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Question 12:

An analyst observes the benchmark Indian NIFTY 50 stock index trading at a forward price-to-earnings ratio of 15. The index's expected dividend payout ratio in the next year is 50 percent, and the index's required return is 7.50 percent. If the analyst believes that the NIFTY 50 index dividends will grow at a constant rate of 4.50 percent in the future, which of the following statements is correct?

- A. The analyst should view the NIFTY 50 as overpriced.
 - B. The analyst should view the NIFTY 50 as underpriced.
 - C. The analyst should view the NIFTY 50 as fairly priced.
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Question 13:

If you require an 8 percent return and must invest USD500,000, which of the investment opportunities in Exhibit 1 should you prefer?

Exhibit 1 Investment Opportunities

Cash flows (in thousands)	t = 0	t = 1	t = 2	t = 3
Opportunity 1	-500	195	195	195
Opportunity 2	-500	225	195	160.008

- A. Opportunity 1
 - B. Opportunity 2
 - C. Indifferent between the two opportunities.
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Question 14:

Italian one-year government debt has an interest rate of 0.73 percent; Italian two-year government debt has an interest rate of 1.29 percent. The breakeven one-year reinvestment rate, one year from now is closest to:

- A. 1.01 percent.
 - B. 1.11 percent.
 - C. 1.85 percent.
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Question 15:

The current exchange rate between the euro and US dollar is USD/EUR1.025. Risk-free interest rates for one year are 0.75 percent for the euro and 3.25 percent for the US dollar. The one-year USD/EUR forward rate that best prevents arbitrage opportunities is:

- A. USD/EUR1.051.
 - B. USD/EUR1.025.
 - C. USD/EUR0.975.
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Question 16:

A stock currently trades at USD25. In one year, it will either increase in value to USD35 or decrease to USD15. An investor sells a call option on the stock, granting the buyer the right, but not the obligation, to buy the stock at USD25 in one year. At the same time, the investor buys 0.5 units of the stock. Which of the following statements about the value of the investor's portfolio at the end of one year is correct?

- A. The portfolio has a value of USD7.50 in both scenarios.
- B. The portfolio has a value of USD25 in both scenarios.
- C. The portfolio has a value of USD17.50 if the stock goes up and USD7.50 if the stock goes down.

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Question 17:

A consultant starts a project today that will last for three years. Her compensation package includes the following:

Year	End-of-Year Payment
1	\$100,000
2	\$150,000
3	\$200,000

If she expects to invest these amounts at an annual interest rate of 3%, compounded annually until her retirement 10 years from now, the value at the end of 10 years is closest to:

- A. \$460,590.
 - B. \$566,466.
 - C. \$618,994.
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Question 18:

A consumer purchases an automobile using a loan. The amount borrowed is €30,000, and the terms of the loan call for the loan to be repaid over five years using equal monthly payments with an annual nominal interest rate of 8% and monthly compounding. The monthly payment is closest to:

- A. €608.29.
 - B. €626.14.
 - C. €700.00.
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Question 19:

A financial contract offers to pay €1,200 per month for five years with the first payment made immediately. Assuming an annual discount rate of 6.5%, compounded monthly, the present value of the contract is closest to:

- A. €61,330.
 - B. €61,663.
 - C. €63,731.
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Question 20:

An individual wants to be able to spend €80,000 per year for an anticipated 25 years in retirement. To fund this retirement account, he will make annual deposits of €6,608 at the end of each of his working years. He can earn 6% compounded annually on all investments. The minimum number of deposits that are needed to reach his retirement goal is closest to:

- A. 28.
- B. 40.
- C. 51.

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Question 21:

An annuity makes seven annual payments of \$10,000 each, with the first payment occurring five years from today. If the discount rate is 6% per year, the value of the annuity today is closest to:

- A. \$41,715.
 - B. \$44,218.
 - C. \$55,824.
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