

Test 4

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1. The buyer of a call option has the choice to exercise, but the writer of the call option has:
 - A. The choice to offset with a put option
 - B. The obligation to deliver the shares at exercise
 - C. The choice to deliver shares or take a cash payoff
 - D. The choice of exercising the call or not
2. Suppose an investor buys one share of stock and a put option on the stock. What will be the value of her investment on the final exercise date if the stock price is below the exercise price? (Ignore transaction costs)
 - A. The value of two shares of stock
 - B. The value of one share of stock plus the exercise price
 - C. The exercise price
 - D. The value of one share of stock minus the exercise price
3. Which of the following investors would be happy to see the stock price rise sharply?
 - (I) Investor who owns the stock and a put option
 - (II) Investor who has sold a put option and bought a call option
 - (III) Investor who owns the stock and has sold a call option
 - (IV) Investor who has sold a call option
 - A. I and II only
 - B. III and IV only
 - C. III only
 - D. IV only
4. Buying a call option, investing the present value of the exercise price in T-bills, and selling the underlying share is the same as:
 - A. Buying a call and a put
 - B. Buying a put and a share
 - C. Buying a put
 - D. Selling a call
5. Suppose an investor buys one share of stock and a put option on the stock and simultaneously sells a call option on the stock with the same exercise price. What will be the value of his investment on the final exercise date?
 - A. Above the exercise price if the stock price rises and below the exercise price if it falls
 - B. Equal to the exercise price regardless of the stock price
 - C. Equal to zero regardless of the stock price
 - D. Below the exercise price if the stock price rises and above if it falls
6. A call option has an exercise price of \$100. At the final exercise date, the stock price could be either \$50 or \$150. Which investment would combine to give the same payoff as the stock?
 - A. Lend PV of \$50 and buy two calls
 - B. Lend PV of \$50 and sell two calls
 - C. Borrow \$50 and buy two calls
 - D. Borrow \$50 and sell two calls
7. Suppose Waldo's stock price is currently \$50. In the next six months it will either fall to \$40 or rise to \$60. What is the current value of a six-month call option with an exercise price of \$50? The six-month risk-free interest rate is 2% (periodic rate).
 - A. \$5.39
 - B. \$15.00

- C. \$8.25
- D. \$8.09

8. Suppose Ann's stock price is currently \$25. In the next six months it will either fall to \$15 or rise to \$40. What is the current value of a six-month call option with an exercise price of \$20? The six-month risk-free interest rate is 5% (periodic rate). [Use the risk-neutral valuation method]

- A. \$20.00
- B. \$8.57
- C. \$9.52
- D. \$13.10

9. Suppose Ann's stock price is currently \$25. In the next six months it will either fall to \$15 or rise to \$40. What is the current value of a six-month call option with an exercise price of \$20? The six-month risk-free interest rate is 5% (periodic rate). [Use the replicating portfolio method]

- A. \$20.00
- B. \$8.57
- C. \$9.52
- D. \$13.10

10. Suppose Victoria's stock price is currently \$20. Six-month call option on the stock with an exercise price of \$12 has a value of \$9.43. Calculate the price of an equivalent put option if the six-month risk-free interest rate is 5% (periodic rate).

- A. \$0.86
- B. \$9.43
- C. \$8.00
- D. \$12.00

11. A stock is currently selling for \$50. The stock price could go up by 10% or fall by 5% each month. The monthly interest rate is 1% (periodic rate). Calculate the price of a European call option on the stock with an exercise price of \$50 and a maturity of two months. (use the two-stage binomial method)

- A. \$5.10
- B. \$2.71
- C. \$4.78
- D. \$3.62

12. If the interest rate is 10%, the upside change is +25% and the downside change is -20%. Calculate the risk-neutral probability of upside change.

- A. 0.5
- B. 0.6667
- C. 0.75
- D. None of the above.

13. The value of a bond that has a probability of default is given by:

- (I) bond value = asset value - value of call option on assets
- (II) bond value = value of an equivalent default-free bond - value of put option on assets
- (III) bond value = value of an equivalent default-free bond + value of put option on assets
- (IV) bond value = asset value + value of call option on assets

- A. I only
- B. I and II only
- C. III and IV only
- D. IV only

14. The value of a risky bond is equal to: asset value - value of call option on assets

True False

15. The value of a risky bond is equal to: value of a bond without default - value of a put option on assets

True False

16. Briefly explain how the Option pricing model can be used for pricing risky debt?

17. The spot US\$/BP exchange rate is 1.65. What is the indirect quote: [BP = British pound]

- A. BP 0.65/ US\$
- B. BP 0.606/US\$
- C. BP 1.2845/US\$
- D. BP

18. The spot Yen/US dollar exchange rate is 108.9 Yen/\$. The 3-month forward rate is 107.16 Yen/US\$. What is the Yen forward premium (or discount) on the dollar, expressed as an annual percent rate?

- A. 6.5% discount
- B. 6.5% premium
- C. 14% discount
- D. 14% premium

19. The spot BP/\$ exchange rate is 0.7006/\$ and the one-year forward rate is BP 06893/\$. If the annual interest rate on dollar CDs is 6½%, what would you expect the annual interest to be on BP CDs?

- A. 4.78%
- B. 6.7%
- C. 3.5%
- D. 8.25%

20. The spot exchange rate for British pounds is 0.60 (BP/US\$). The 180-day risk-free rates in the US and Britain are 4.6% and 6.3%, respectively. What is the forward exchange rate in BP/US\$? (Assume that the interest rates are for 180-days.)

- A. 0.6170
- B. 0.6098
- C. 0.5988
- D. 0.5904

21. The Mexican economy is predicted to average double digit inflation over the next two years of 12% per annum. The inflation forecast for the US is 2.5% per annum. If the current exchange rate is \$0.1177/peso, what will be the exchange rate two years from now?

- A. \$0.831
- B. \$0.09858
- C. \$0.1401
- D. \$0.1667

22. For estimating the cash flows of a foreign project, there is no need to forecast exchange rates for the life of the project.

True False

23. For a project's cost of capital measured in Swiss francs, we use Swiss interest rates and beta with respect to Swiss market.

True False

24. A currency forward contract is described by:

- A. Agreeing today to buy or sell specified amount of a currency at a later date at a price set in the future
- B. Agreeing today to buy or sell specified amount of a currency today at its current price
- C. Agreeing today to buy or sell specified amount of a currency at a later date at a price set today
- D. None of the above

25. The expectations theory of forward rates implies that:

- A. The forward rate is determined by government's expectations
- B. On average, the forward rate is equal to the future spot rate
- C. The forward rate is determined by expectations of the future spot interest rate
- D. The forward rate is equal to the future spot rate

26. If a Big Mac costs \$2.90 in the USA and in Japan 250 Yens, according to PPP, what is the implied exchange rate in Yens/US\$?

- A. 106
- B. 86.2069
- C. 125
- D. None of the above

27. Assume that both the law of one price and the expectations theory of forward rates hold. The spot rate for the Ruritanian doubloon is 0.455 doubloon/\$, and the one-year forward rate is 0.476 doubloon/\$. Suppose that next year's forecasted rate of inflation in Ruritania is now revised upward by 10%. How does this affect exchange rates?

- A. The current spot rate changes to 0.50 doubloon/\$
- B. The forward rate changes to 0.524 doubloon/\$
- C. Next year's expected spot rate changes to 0.501 doubloon/\$
- D. The forward rate changes to 0.501 doubloon/\$

An Australian firm is evaluating a proposal to build a new plant in the US. The expected cash flows in US\$ (in millions) are as follows: Year 0, -100; Year 1, 40; Year 2, 50; Year 3, 65/. The discount rate in A\$ is 10%, while the discount rate in US\$ is 12% and the spot rate is US\$0.60/A\$

28. Calculate the NPV of the project in US\$.

- A. +36.40
- B. -21.84
- C. +13.10
- D. +21.84

29. Calculate the NPV in A\$:

- A. +36.40
- B. -21.84
- C. +13.10
- D. +21.84

30. Briefly explain the concept of interest rate parity.

Test 4 KEY

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1. (p. 543) B

2. (p. 543) C

3. (p. 543) A

4. (p. 546) C

5. (p. 547) B

6. (p. 566) A

Value of two calls: $2(150 - 100) = 100$ or value of two calls $=: 2(0) = 0$ (not exercised); payoff = $100 + 50 = 150$ or payoff = $0 + 50 = 50$

7. (p. 567) A

8. (p. 567) B

Method I: $25 = [x(40) + (1-x)15]/1.05$; $x = 0.45$ $1-x = 0.55$

9. (p. 567) B

$40(A) + 1.05(B) = 20$; $15(A) + 1.05(B) = 0$; $A = 0.8$; $B = -11.43$

10. (p. 570) A

Value of Put = $9.43 - 20 + 12/(1.05) = \0.8

11. (p. 574) B

$50 = [55(x) + 47.5(1-x)]/(1.01)$; $x = 0.4$; $1-x = 0.6$

12. (p. 584) B

$p = 10 - (-20)/(25 - (-20)) = 0.6667$

13. (p. 652) B

14. (p. 652) TRUE

15. (p. 652) TRUE

16. (p. 687) The value of a risky debt can be thought of as the value of an equivalent risk-free debt less the value of a put option. Also, bond value can be thought of as the value of the assets of a firm minus the value of call option on assets. Conceptually this is an attractive way to price risky bonds. But in practice it is quite complicated.

17. (p. 755) B

18. (p. 756) B

Forward (premium or discount) = $4[(108.9/107.16) - 1] = + 6.5\% = 6.5\%$ premium

19. (p. 758) A

$1+r_{BP} = (0.6893/0.7006)(1.065) = 1.0478$ or $r_{BP} = 4.78\%$

20. (p. 758) B

$F = (0.60)(1.063/1.046) = 0.6098$

21. (p. 761) B

$E(\text{Spot}) = (0.1177)((1.025/1.12)^2) = \$0.09858/\text{peso}$

22. (p. 768) TRUE

23. (p. 771) TRUE

24. (p. 756) C

25. (p. 761) B

26. (p. 763) B

27. (p. 763) B

28. (p. 768) D

$$\text{NPV} = -100 + (40/1.12) + (50/1.12^2) + (65/1.12^3) = +21.84$$

29. (p. 768) A

30. (p. 761) Interest rate parity provides the relationship between interest rates in two countries and the differences between the forward and the spot rates. Interest rate parity is ensured through arbitrage. This explains how forward rates are determined in the marketplace. Forward rates serve to determine interest rate parity between two countries, for investors involved in covered interest arbitrage.