Description	This is the mid-semester exam of FINM3405 S2 2023.
Instructions	You must complete all questions.
Timed Test	This test has a time limit of 90 minutes. The test will save and be submitted automatically when the time expires. Warnings appear when **half the time**, **5 minutes**, **1 minute**, and **30 seconds** remain. *[The timer does not appear when previewing this test]*
Multiple Attempts	This Test allows multiple attempts.
Force Completion	This Test can be saved and resumed at any point until time has expired. The timer will continue to run if you leave the test.
	Your answers are saved automatically.

1. A one-year forward contract is an agreement where:
    A. One side has the right to buy an asset for a certain price in one year's time.
    B. One side has the obligation to buy an asset for a certain price in one year's time.
    C. One side has the obligation to buy an asset for a certain price at some time during the next year.
    D. One side has the obligation to buy an asset for the market price in one year's time.

2. Which of the following is NOT true?
    A. When a CBOE call option on IBM is exercised, IBM issues more stock.
    B. An American option can be exercised at any time during its life.
    C. A call option will always be exercised at maturity if the underlying asset price is greater than the strike price.
    D. A put option will always be exercised at maturity if the strike price is greater than the underlying asset price.

3. A one-year call option on a stock with a strike price of \$30 costs \$3; a one-year put option on the stock with a strike price of \$30 costs \$4. Suppose that a trader buys two call options and one put option. The breakeven stock price above which the trader makes a profit is:
    A. \$35
    B. \$40
    C. \$30
    D. \$36

4. Which of the following best describes the term "spot price"?
    A. The price for immediate delivery.
    B. The price for delivery at a future time.
    C. The price of an asset that has been damaged.
    D. The price of renting an asset.

5. Which of the following is true?
    A. Both forward and futures contracts are traded on exchanges.
    B. Forward contracts are traded on exchanges, but futures contracts are not.
    C. Futures contracts are traded on exchanges, but forward contracts are not.
    D. Neither futures contracts nor forward contracts are traded on exchanges.

6. On March 1 a commodity's spot price is $60 and its August futures price is $59. On July 1, the spot price is $64 and the August futures price is $63.50. A company entered into futures contracts on March 1 to hedge its purchase of the commodity on July 1. It closed out its position on July 1. What is the effective price (after taking account of hedging) paid by the company?
   1. $59.50
   2. $60.50
   3. $61.50
   4. $63.50

7. A company has a $36 million portfolio with a beta of 1.2. The futures price for a contract on an index is 900. Futures contracts on $250 times the index can be traded. What trade is necessary to reduce beta to 0.9?
   A. Long 192 contracts
   B. Short 192 contracts
   C. Long 48 contracts
   D. Short 48 contracts

8. Which of the following is a reason for hedging a portfolio with an index futures?
   A. The investor believes the stocks in the portfolio will perform better than the market but is uncertain about the future performance of the market.
   B. The investor believes the stocks in the portfolio will perform better than the market and the market is expected to do well.
   C. The portfolio is not well diversified and so its return is uncertain.
   D. All of the above.

9. Which of the following is a consumption asset?
   A. The S&P 500 index
   B. The Canadian dollar
   C. Copper
   D. IBM stock

10. An investor shorts 100 shares when the share price is $50 and closes out the position six months later when the share price is $43. The shares pay a dividend of $3 per share during the six months. How much does the investor gain?
    A. $1,000
    B. $400
    C. $700
    D. $300

11. The spot price of an investment asset that provides no income is $30 and the risk-free rate for all maturities (with continuous compounding) is 10%. What is the three-year forward price?
    A. $40.50

B. $22.22
C. $33.00
D. $33.16

12. An exchange rate is 0.7000 and the six-month domestic and foreign risk-free interest rates are 5% and 7% (both expressed with continuous compounding). What is the six-month forward rate?
    A. 0.7070
    B. 0.7177
    C. 0.7249
    D. 0.6930

13. Which of the following describes a long position in an option?
    A. A position where there is more than one year to maturity.
    B. A position where there is more than five years to maturity.
    C. A position where an option has been purchased.
    D. A position that has been held for a long time.

14. An investor has exchange-traded put options to sell 100 shares for $20. There is 25% stock dividend. Which of the following is the position of the investor after the stock dividend?
    A. Put options to sell 100 shares for $20.
    B. Put options to sell 75 shares for $25.
    C. Put options to sell 125 shares for $15.
    D. Put options to sell 125 shares for $16.

15. When the stock price increases with all else remaining the same, which of the following is true?
    A. Both calls and puts increase in value.
    B. Both calls and puts decrease in value.
    C. Calls increase in value while puts decrease in value.
    D. Puts increase in value while calls decrease in value.

16. The price of a stock, which pays no dividends, is $30 and the strike price of a one year European call option on the stock is $25. The risk-free rate is 4% (continuously compounded). Which of the following is a lower bound for the option such that there are arbitrage opportunities if the price is below the lower bound and no arbitrage opportunities if it is above the lower bound?
    A. $5.00
    B. $5.98
    C. $4.98
    D. $3.98

17. Which of the following is assumed by the Black–Scholes–Merton model?
    A. The return from the stock in a short period of time is lognormal.
    B. The stock price at a future time is lognormal.

C. The stock price at a future time is normal.
D. None of the above.

18. A stock price is \$100. Volatility is estimated to be 20% per year. What is an estimate of the standard deviation of the change in the stock price in one week?
    A. \$0.38
    B. \$2.77
    C. \$3.02
    D. \$0.76

19. The risk-free rate is 5% and the expected return on a non-dividend-paying stock is 12%. Which of the following is a way of valuing a derivative?
    A. Assume that the expected growth rate for the stock price is 17% and discount the expected payoff at 12%.
    B. Assuming that the expected growth rate for the stock price is 5% and discounting the expected payoff at 12%.
    C. Assuming that the expected growth rate for the stock price is 5% and discounting the expected payoff at 5%.
    D. Assuming that the expected growth rate for the stock price is 12% and discounting the expected payoff at 5%.

20. When the non-dividend paying stock price is \$20, the strike price is \$20, the risk-free rate is 6%, the volatility is 20% and the time to maturity is 3 months which of the following is the price of a European call option on the stock?
    A. $20N(0.1) - 19.7N(0.2)$
    B. $20N(0.2) - 19.7N(0.1)$
    C. $19.7N(0.2) - 20N(0.1)$
    D. $19.7N(0.1) - 20N(0.2)$