# Mid-West University
## Examinations Management Office
Surkhet, Nepal
Final Examination-2079
Master of Business Studies (MBS)
Semester - IV

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|---|---|
| Subject: Derivatives and Risk Management | Course Code: FIN 547 |
| Full Marks: 60   Pass Marks: 30 | Time: 3: 00 Hours |

*You are required to answer in your own words as far as applicable. Figures in the margins indicate full marks.*

## SECTION A: CRITICAL THINKING QUESTIONS (10 X 1 = 10 MARKS)

*Answer **ALL** the questions:*

1. Write the meaning of financial risk.
2. What do you mean by derivatives?
3. Define calendar spread.
4. Set the possible strike price of the stocks which is currently selling at Rs 1,250, if strike prices are set in Rs 25 increment for stock selling for less than Rs 1,000, Rs 50 the increment for stock selling for is between Rs 1,000 and Rs 2,000 and Rs 100 the increment is for stock selling for more than Rs 2,000.
5. Given the following expiration cycles, prepare the expiration cycle of options written in February for January expiration cycle:

   January, April, July and October

   February, May, August and November

   March, June, September and December
6. Write any two assumptions of Black-Scholes option pricing model.
7. Calculate the adjusted stock price from the following information:

   Stock price $(V_S) = 150$

   Exercise price $(E) = 175$

   Risk free rate $(r) = 0.05$

   Stock return standard deviation $(\sigma) = 0.25$

   One dividend of Rs 15, ex-dividend in 21 days
8. What is the maintenance margin in future?
9. Write the meaning of hedge ratio.
10. List any two impetus of risk management.

## SECTION B: SHORT ANSWER QUESTIONS (3 X 8 = 24 MARKS)

*Answer any **THREE** questions:*

11. What is future? Differentiate between future and forward.                     [3+5]
12. Write the meaning of volatility in Black-Scholes option pricing model. How implied volatility measured? Explain.                     [3+5]
13. Consider the following three put options:

| Option | Exercise price | Value of stock | Option price |
|--------|----------------|----------------|--------------|
| A | 80 | 100 | 4 |
| B | 100 | 100 | 12 |
| C | 120 | 100 | 30 |

   a) Indicate which option is ITM, ATM, and OTM.                     [3]
   b) Calculate the intrinsic value of each option.                     [3]
   c) Calculate the premium of each option.                     [2]

14. On January 1$^{st}$ the price of T &T common stock was Rs.32 and Prabha paid a premium of Rs. 3 per share for an April call with Rs. 30 exercise price on *it.* At the same time she accepted a Rs. 1 per share premium to write an April call on T & T with Rs 35 exercise price.

a) What is the name of the position Prabha has acquired? [1]

b) How much did Prabha pay for this portfolio of two calls? [1]

c) Construct a table showing Prabha gains and loses from her two call options at Rs 5 stock price intervals for T & T prices from Rs 25 to Rs 45 inclusive. [4]

d) Graph the gain and loss of the strategy. At what T & T stock price would Prabha break even on her portfolio *of* two options? [2]

15. What is Swaps? Explain the different types of Swaps. [3+5]

## SECTION C: LONG ANSWER QUESTIONS (2 X 13 = 26 MARKS)

*Answer any **TWO** questions:*

16. Discuss the future price and expected spot price relationship under certainty and uncertainty. [13]

17. The stock of Morning Star Company is currently selling for Rs 250. A call option on this stock has Rs 250 exercise price. The time to expiration of option is six months from now. The stock of Morning Star follows binomial model. The stock price will be six months from now will either can increase to Rs. 300 or decrease to Rs. 200. If the price rises to Rs. 300, then six months later the price will be either Rs. 325 or Rs. 275. If, however, the price initially falls to Rs. 200, six months later the price will be either Rs. 300 or Rs. 100 The risk free interest rate is 6 percent over six month periods and you can borrow or lend at that rate. Assuming it is a European option; find the call option value today. [13]

18. Consider the stock trades for Rs 75. Call and put the options on this stock have an exercise price of Rs 70 and they expire in 150 days. The risk free rate is 9 percent per annum, and standard deviation of this stock is 36 percent.

    a. What is the value of European call option written on this stock? [7]

    b. What is the value of European put option written on this stock? [4]

    c. If the call is actually selling at Rs 3 in the market, what should you do? [2]

**THE END**