CA FINAL | **P2: ADVANCED FINANCIAL MANAGEMENT** | **11.03.2025**

[SYLLABUS : Derivatives, Interest Rate Risk Management]

TIME : 1 HR 45 MIN | **TOTAL : 60 MARKS**

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GENERAL INSTRUCTIONS TO CANDIDATES

1. The question paper comprises of two parts, Part A and Part B.
2. Part A comprises of MCQs and Part B comprises of descriptive questions.
3. Working notes should form part of answer, if any.
4. Answers should be written only in English.
5. Duration of the examination is 1 hr 45 mins only.
6. Students who want to get their paper evaluated follow the instructions given in the channel link above.

Part A

Case Scenario

X and Y are two friends. Since Y has earned a lot of profit from trading in financial derivative market, X is also considering speculating on Gamma Corporation's shares which is currently trading at 700 per share through taking positions in options in stocks of same company. Accordingly, X took following contract positions in the options on Gama Corporation's stock:

i. Purchasing one contract of 2-month call option with a premium of35 and an exercise price of 750.
ii. Purchasing one contract of 2-month put option with a premium of 25 and an exercise price of 600.

After some time, trading 1n Option Market and understanding the nitty-gritties of same, X being CEO in an organization advised his team to implement the concept of Financial Options in the Capital Budgeting decisions called 'Real Option

Based on the above information answer the following questions:

Question : 1

Assuming that the contract size of each option contract is 100 and the price of Gama Corporation's share after two months falls to Rs. 550, the net pay-off of X will be

(2 Marks)

a) 1000 loss
b) 1000 Profit
c) 3000 Profit
d) 3000 loss

Question : 2

The per share price of Gama Corporation's stock after 2 months at which X shall be at Break Even is (2 marks)

a) 540
b) 600
c) 625
d) 785

Question : 3

Which of the following statement is false regarding Real Options?

(1 Mark)

a) Real Options methodology is a n approach to capital budgeting that relies on Option Pricing theory to evaluate projects.
b) Real options approach is intended to supplement, and not replace, capital budgeting analyses based on standard Discounted Cash Flow (DCF) methodologies.
c) Real options are different from financial options as their periods start from the end of 1st year and are higher than financial options.
d) Real options are normally traded in the market and are priced.

Case Scenario

TM Fincorp has bought a 6 x 9100 crore Forward Rate Agreement (FRA) at 5.25%. On fixing

date reference rate i.e. MIBOR turns out be as follows:

Period	Rate (%)
3 months	5.50
6 months	5.70
9 months	5.85

Question : 4

Calculate the Profit/Loss to TM Fincorp. in terms of basis points (1 Mark)

a) 25 basis points
b) 45 basis points
c) 60 basis points
d) 50 basis points

Question : 5

Calculate the Profit/Loss to TM Fincorp. in terms of basis points (2 Marks)

a) ₹ 6,30,032
b) ₹ 5,30,032
c) ₹ 6,20,032
d) ₹ 5,20,032

Question : 6

XYZ Limited borrows £ 15 Million of six months LIBOR + 10.00% for a period of 24 months. The company anticipates a rise in LIBOR; hence it proposes to buy a Cap Option from its Bankers at the strike rate of 8.00%. The lump sum premium is 1.00% for the entire reset periods and the fixed rate of interest is 7.00% per annum. The actual position of LIBOR during the forthcoming reset period is as under:

Reset Period LIBOR

1	9.00%
2	9.50%
3	10.00%

What is the benefit accrued to XYZ from entering into the above contract?

(2 Marks)

a) 122,583
b) 183,875
c) 214,917
d) 211,912

Part B **50 Marks**

Question : 1

The shares of TIC Ltd. are currently priced at ₹415 and call option exercisable in three months' time has an exercise rate of ₹400. Risk free rate of interest is 5% p.a. and standard deviation (volatility) of share price is 22%.

(i) Based on the assumption that TIC Ltd. is not going to declare any dividend over the next three months, is the option worth buying for ₹25?

(ii) Calculate value of the call option based on Black Scholes valuation model if the current price is considered as ₹380.

(iii) What would be the worth of put option if the current price is considered ₹380?

(iv) If TIC share price is taken as ₹408 and a dividend of ₹10 is expected to be paid in the two 59 months' time, then calculate value of the call option.

Given: In(1.0375) = 0.03681 ; In(0.95) = -0.05129 ; In(0.9952) = -0.00481 ; e0.0125 = 1.012578 ; e0.008333 = 1.0084 (10 Marks)

<u>**Question : 2**</u>

AB Ltd.'s equity shares are presently selling at a price of ₹500 each. An investor is interested in purchasing AB Ltd.'s shares. The investor expects that there is a 70% chance that the price will go up to ₹650 or a 30% chance that it will go down to ₹450, three months from now. There is a call option on the shares of the firm that can be exercised only at the end of three months at an exercise price of ₹550.

Calculate the following:

(i) If the investor wants a perfect hedge, what combination of the share and option should he select?

(ii) Explain how the investor will be able to maintain identical position regardless of the share price.

(iii) If the risk-free rate of return is 5% for the three months period, what is the value of the option at the beginning of the period?

(iv) What is the expected return on the option? (6 Marks)

Question : 3

The price of March Nifty Futures Contract on a particular day was 9170. The minimum trading lot on Nifty Futures is 50. The initial margin is 8% and the maintenance margin is 6%. The index closed at the following levels on next five days:

Day	1	2	3	4	5
Settlement Price (₹)	9380	9520	9100	8960	9140

You are required to calculate:

(i) Mark to market cash flows and daily closing balances on account of
   a. An investor who has taken a long position at 9170
   b. An investor who has taken short position at 9170

(ii) Net profit/loss on each of the contracts (5 Marks)

Question : 4

Mr. SG sold five 4-Month Nifty Futures on 1st February 2020 for ₹9,00,000. At the time of closing of trading on the last Thursday of May 2020 (expiry), Index turned out to be 2100. The contract multiplier is 75.

Based on the above information calculate:

(a) The price of one Future Contract on 1st February 2020.

(b) Approximate Nifty on 1st February 2020 if the Price of Future Contract on same date was theoretically correct. On the same day Risk Free Rate of Interest and Dividend Yield on Index was 9% and 6% p.a. respectively.

(c) The maximum Contango/ Backwardation.

(d) The pay-off of the transaction.

Note: Carry out calculation on month basis. (5 Marks)

Question : 5

Electraspace is consumer electronics wholesaler. The business of the firm is highly seasonal in nature. In 6 months of a year, firm has a huge cash deposits and especially near Christmas time and other 6 months firm cash crunch, leading to borrowing of money to cover up its exposures for running the business.

It is expected that firm shall borrow a sum of €50 million for the entire period of slack season in about 3 months.

A Bank has given the following quotations:

Spot	5.50% - 5.75%
3 × 6 FRA	5.59% - 5.82%
3 × 9 FRA	5.64% - 5.94%

3 months €50,000 future contract maturing in a period of 3 months is quoted at 94.15 (5.85%). You are required to determine:

(a) How an FRA, shall be useful if the actual interest rate after 3 months turnout to be:

i. 4.5%

ii. 6.5%

(b) How 3 months Future contract shall be useful for company if interest rate turns out as mentioned in part (a) above. (8 Marks)

Question : 6

IF an Indian firm has its subsidiary in Singapore and SF a Singapore firm has its subsidiary in India and face the following interest rates:

Company	IF	SF
INR Floating Rate	BPLR+0.5%	BPLR+ 1.5%
SGD (fixed rate)	3%	3.50%

SF wishes to borrow Rupee loan at a floating rate and IF wishes to borrow SGD at a fixed rate. The amount of loan required by both the companies is same at the current exchange rate. A Ban arranges a swap and requires 50 basis points as its commission, which is to be shared equally. IF requires a minimum gain of 20 basis points and SF requires a minimum gain of 10 basis points for structuring the deal. The Bank is very keen to structure the deal, even if, it has to forego a part of its commission.

You are required to find out:

(i) Whether there are any advantages available to IF and SF?

(ii) Whether a swap can be arranged which may be beneficial to both the firms?

(iii) What rate of interest will they end up paying? Show detailed working.

(6 Marks)

Question : 7

Derivative Bank entered into a plain vanilla swap through on OIS (Overnight Index Swap) on a principal of ₹10 crores and agreed to receive MIBOR overnight floating rate for a fixed payment on the principal. The swap was entered into on Monday, 2nd August, 2010 and was to commence on 3rd August, 2010 and run for a period of 7 days.

Respective MIBOR rates for Tuesday to Monday were: 7.75%, 8.15%, 8.12%, 7.95%, 7.98%, and 8.15%. If Derivative Bank received ₹317 net on settlement, calculate fixed rate and interest under both legs. Notes:

(a) Sunday is Holiday.

(b) Work in rounded rupees and avoid decimal working (4 Marks)

Question : 8 (Previous Syllabus Question)

Following are the details of a portfolio consisting of three shares:

Share	Portfolio weight	Beta	Expected return in %	Total Variance
DGS	0.35	0.30	12%	0.010
DV	0.25	1.20	18%	0.030
BP	0.40	0.50	10%	0.015

Standard Deviation of Market Portfolio Returns = 14%

Covariance (DGS, DV) = 0.020,

Covariance (DV, BP) = 0.050,

Covariance (BP, DGS) = 0.030

You are required to calculate:

(i) The Portfolio Beta

(ii) Residual Variance of each of the three Shares,

(iii) Portfolio Variance using Sharpe Index Model,

(iv) Portfolio Variance (on the basis of Modern Portfolio Theory given by Markowitz). (6 Marks)

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