## 18534

## FINAL EXAMINATION

December 2022
P-14(SFM)
Syllabus 2016

## Strategic Financial Management

Time Allowed: 3 Hours
The figures in the margin on the right side indicate full marks.
Working Notes should form part of the respective answers.
Wherever necessary, candidates may make appropriate assumptions and clearly state them in answer.
No present value factor table or other statistical table. will be given in addition to this question paper. Candidates may use the values tabulated at the relevant portion of this question paper for

Computation of answers where required.
This paper contains two sections, $\boldsymbol{A}$ and $\boldsymbol{B}$. Section $\boldsymbol{A}$ is compulsory and contains question 1 of 20 marks. Section B contains questions 2 to 8 , each carrying 16 marks.
Answer any five questions from Section B.

## Section A

Answer all the questions.
Each question carries two marks.

1. Choose the correct option from the four alternatives given: ( 1 mark is for the correct choice and 1 mark is for the justification/workings. You may present only the Roman numeral, your choice and the reason/working, without copying the question). $2 \times 10=20$
(i) The initial outlay for a equipment of RAGIN Ltd. is ₹ $10,00,000$. It is estimated that this will generate cash in flows of $₹ 3,40,000$ per annum for 4 years. The Cost of Capital of the Company is 5 per cent. (Ignore Taxes).
By how much can the Annual Cash in flows change before the Company becomes indifferent to the Project?
[Given : PVI FA ( $5 \%, 4$ years) $=3.546$ ]
[Present Calculation to nearest rupees]
(A) ₹ 57,992
(B) ₹ 60,125
(C) ₹ 61,310
(D) None of the above
(ii) MS PARNA is planning to construct a minimum risk portfolio by investing in the Shares of NAB Ltd., and SAN Ltd. The risk associated with the return of NAB Ltd. and SAN Ltd. are $23 \%$ and $25 \%$ respectively. If the co-variance between the returns of Shares of both companies is 0 (zero), the proportion of funds to be invested in the Shares of NAB Ltd. will be:
(A) $45.84 \%$
(B) $54 \cdot 16 \%$
(C) $66.67 \%$
(D) None of the above
(iii) The Closing prices of the Stock of TORRENT LTD. on consecutive trading days are as under:

| Days | Closing pricing (₹) |
| :---: | :---: |
| 1 | $125 \cdot 45$ |
| 2 | $135 \cdot 25$ |
| 3 | 132.75 |
| 4 | 142.75 |
| 5 | 145.25 |

The Relative Strength of the stock of Torrent Ltd. is
(A) 0.9875
(B) 1.0255
(C) 1.0628
(D) None of the above
(iv) A Project has a Net Present Value (base Case NPV) of ₹ $1,20,000$. However, this project has one financial side effects; it expands the firm's borrowing power by $₹ 4,80,000$. The project lasts indefinitely so it is treated as supporting perpetual debt. If the borrowing rate is 15 per cent and the net tax shield is 35 per cent, what will be the Adjusted Net Present Value (ANPV) of the project?
(A) ₹ $2,90,000$
(B) ₹ $2,88,000$
(C) ₹ $2,40,000$
(D) None of the above
(v) The Current Price of ACC's stock is $₹ 1,010$ and it is expected that price of stock may either go up to ₹ 1,212 or go down to $₹ 808$. If the stock price of call option of ACC's stock is ₹ 1,010 and Risk - free rate is $6 \cdot 5 \%$, the probability of decrease in stock price will be
(A) 0.6625
(B) 0.5230
(C) 0.4680
(D) 0.3375
(vi) An option's theoretical value increase by 1.50 if the interest rate is decrease by $1 \%$. Then, 1.50 is
(A) The Gamma of a call option
(B) The Theta of a put option
(C) The Rho of a put option
(D) The Rho of a call option
(vii) LONZA Ltd., an export customer who relied on the inter - bank rate of ₹/US\$ $80 \cdot 50 / 15$ requested his banker to purchase a bill for US $\$ 1,00,000$. What is the rate to be quoted to LONZA Ltd., if the banker wants a margin of $0.10 \%$ ? (Calculation rounded off to two decimal point)
(A) ₹ 80.58
(B) ₹ $80 \cdot 42$
(C) ₹ $80 \cdot 12$
(D) ₹ 78.90
(viii) Consider a bullish spread option strategy using call option on the stock of GANT LTd., with ₹ 60 exercise price, priced at ₹ 6 and a call option with ₹ 75 exercise price, priced at ₹ $3 \cdot 50$. The current market price of stock of Gant Ltd., is ₹ 67 . If the price of the stock is $₹ 95$ on maturity, the net profit at expiration will be
(A) ₹ 8.50
(B) ₹ $10 \cdot 50$
(C) ₹ $12 \cdot 50$
(D) ₹ 15.00
(ix) The Sharpe ratio and Treynor ratio of CHOLA EQUITY FUND are 0.37 and $4 \cdot 16$ respectively. The risk premium on the Fund is $6 \%$. Standard deviation of the Fund's return is $11 \cdot 80 \%$. If the standard deviation of the Market Index's return is $9.56 \%$, the Correlation Co-efficient between return of the Fund and the Market will be
(A) 0.90
(B) 0.85
(C) 0.72
(D) None of the above
(x) A call option is written for a strike price of ₹ 400 , with a premium of ₹ 50 .
(A) The holder's maximum loss is ₹ 50
(B) The holder's maximum gain is $₹ 50$
(C) The writer's maximum loss is ₹ 50
(D) The writer's maximum gain is ₹ 50

## Section B

Answer any five questions.
2. (a) MEX Ltd., has an investment proposal, requiring an outlay of $₹ 10$ Lakh. The investment proposal is expected to have two years economic life with no salvage value.
In year 1 , there is $\dot{\dot{a}} 0.4$ probability that cash in flow after tax will be $₹ 6$ lakh and 0.6 probability that cash in flow after tax will be $₹ 8$ lakh. The probability assigned to cash in flow after tax for year 2 are as follows:

| Cash in flow for year 1 (₹) | 6 Lakhs |  | 8 Lakhs |  |
| :---: | :---: | :---: | :---: | :---: |
| Cash in flow for year 2 | $₹$ | Probability | ₹ | Probability |
|  | $3 \cdot 00$ Lakh | $0 \cdot 2$ | 4 Lakh | $0 \cdot 4$ |
|  | 4.00 Lakh | 0.3 | 6 Lakh | 0.5 |
|  | $5 \cdot 00$ Lakh | 0.5 | 7 Lakh | $0 \cdot 1$ |

The company used $12 \%$ discount rate for this type of investment.
Required:
(i) Construct a Decision Tree for the proposed investment project.
(ii) Calculate the expected Net Present Value (NPV), giving the break up of each path of the decision tree.
(iii) What Net Present Value will be the project yield, if the worst outcome is realized? What is its probability?
(iv) What is the probability of having a negative NPV?
(v) Will the project be accepted?
[Given : PVIF (r, n yrs.)]:

| YEAR | $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| PVIF (12\%, Yr) | 0.8929 | 0.7972 | 0.7118 | 0.6355 | 0.5674 | 0.5066 |

$$
2+5+(1 \times 3)=10
$$

(b) AGRON LTD. is Contemplating whether to replace an existing machine or to spend money on overhauling it. Agron Ltd. currently pays no taxes. The replacement machine costs ₹ $1,00,000$ now and requires maintenance of $₹ 10,000$ at the end of every year for 8 years. At the end of 8 years, it would have a salvage value of $₹ 20,000$ and would be sold. The existing machine requires increasing amounts of maintenance each year and its salvage value falls each year as follows:

| Years | Maintenance $(\boldsymbol{₹})$ | Salvage (₹) |
| :---: | ---: | ---: |
| Present | 0 | 40,000 |
| 1 | 10,000 | 25,000 |
| 2 | 20,000 | 15,000 |
| 3 | 30,000 | 10,000 |
| 4 | 40,000 | 0 |

The Opportunity Cost of Capital for AGRON LTD. is $10 \%$
[Given PVIF]:

| End of year | $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ | $\mathbf{7}$ | $\mathbf{8}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Present value <br> factor @ $10 \%$ | 0.9091 | 0.8264 | 0.7513 | 0.6830 | 0.6209 | 0.5645 | 0.5132 | 0.4665 |

PVI FA ( $10 \%, 8$ yrs.) $=5 \cdot 3349$ (Ignore Taxation)

## Required:

When should the AGRON Ltd. replace the Machine?
3. (a) SHS Asset Management Company provides the following information about three funds CMB (All equity fund), BCG (Equal Debt and Equity) and SFM (20\% Equity and 80\% Debt):

| Particular | CMB | BCG | SFM |
| :--- | ---: | ---: | ---: |
| Average Return | $30 \%$ | $20 \%$ | $15 \%$ |
| Standard Deviation | $12 \%$ | $6 \%$ | $5 \%$ |
| Correlation with Market | 0.40 | 0.75 | 0.60 |

Risk Free Return is $6 \%$ and Return on Market Portfolio is $20 \%$, with a standard deviation of 5\%.
Required:
Determine for each of the three Funds:
(i) Total Gain and the Net Gain under FAMA's Net Selectivity
(ii) Systematic Risk and Unsystematic Risk
$3+4+3=10$
(b) DWARKA Mutual Fund has the following assets in Scheme Stargold at the close of business on 31st March, 2022.

| Company | No. of Shares | Market Price per Share (₹) |
| :---: | :---: | :---: |
| A Ltd. | 20,000 | 25 |
| B Ltd. | 30,000 | 350 |
| C Ltd. | 38,000 | 290 |
| D Ltd. | 50,000 | 400 |

The total number of units of Scheme Stargold are 10 lakhs. The Scheme Stargold has accrued expenses of ₹ $2,00,000$ and other liabilities of ₹ $2,50,000$.

You are required to ascertain the NAV per unit of the Scheme Stargold as on 31.03.2022.
4. (a) BINT Ltd.'s equity shares are presently selling at a price of $₹ 600$ each. MS ASHINA, an investor is interested in purchasing Bint Ltd.'s shares. The investor expects that there is a $70 \%$ chance that the price will go up to ₹ 750 or a $30 \%$ chance that it will go down to ₹ 550 , three months from now. There is a call option on the shares of the company that can be exercised only at the end of three months at an exercise price of $₹ 650$.

Required:
Calculate the following:
(i) If the investor wants a perfect hedge, what combination of the share and option should she 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 $5 \%$ for the three months period, what is the value of the call option at the beginning of the period?
(iv) What is the expected return on the call option?
(b) The following are the details of a PORTFOLIO consisting of three shares:

| Shares | Portfolio Weight | Beta | Expected return in (\%) | Total Variance |
| :---: | :---: | :---: | :---: | :---: |
| GSD | 0.20 | 0.40 | 14 | 0.015 |
| DGS | 0.50 | 0.50 | 15 | 0.025 |
| BM | 0.30 | 1.10 | 21 | 0.100 |

Standard Deviation of Market Portfolio Returns is 10\% .
Covariance $(G S D$, DGS $)=0.030$
Covariance $(\mathrm{DGS}, \mathrm{BM})=0.020$
Covariance $(\mathrm{BM}, \mathrm{GSD})=0.040$
Required:
Calculate the following:
(i) Portfolio Beta
(ii) Systemic Risk of each of the three shares
(iii) Systemic Variance of Portfolio
(iv) Portfolio Variance (on the basis of Modern Portfolio Theory given by Markowitz)
5. (a) MR. TRITIN, an Investor has a Portfolio consisting of Five Securities on April 2022 as shown below:

| Security | Market price (₹) | No. of Shares | $\boldsymbol{\beta}$-Value |
| :---: | :---: | :---: | :---: |
| A Ltd. | 29.40 | 400 | 0.59 |
| B Ltd. | 318.70 | 800 | 1.32 |
| C Ltd. | $660 \cdot 20$ | 150 | 0.87 |
| D Ltd. | $275 \cdot 40$ | 750 | 1.24 |
| E Ltd. | 281.90 | 400 | 1.16 |

The cost of capital for the investor is $20 \%$ p.a. Continuous Compounded. The investor fears a fall in the price of the shares in the near future. Accordingly, he approaches you for the advice to protect the interest of his portfolio.
You can make use of the following information:
(i) The current NIFTY value is 10200 .
(ii) NIFTY Futures can be traded in Units of 25 only.
(iii) Futures for May are currently quoted at 10440 and futures for June are being quoted at 10620 .

You are required to calculate:
(i) The beta of Investor's portfolio.
(ii) The theoretical value of the futures contract for contracts expiring in May and June.
(iii) The number of NIFTY contracts that he would have to sell if he desires to hedge until June in his total portfolio.
(iv) If MR TRITIN seeks to increase the portfolio Beta to 2.30 , what will be the proportion of market value of investments B Ltd. to the value of total investments plus $10 \%$ margin on futures? (NIFTY Value is 10200).
(No. of contracts and Amount to be rounded off to the nearest integer and Calculations to be considered upto 4 decimal points.)
[Given : In $(1.20)=0.18232, \mathrm{e}^{0.03}=1.03045, \mathrm{e}^{0.033}=1.03355$, $\mathrm{e}^{0.046}=1.04707, \mathrm{e}^{0.05}=1.0512, \mathrm{e}^{0.0333}=1.03386$ ]
(No. of months in a year is 12 months)
(b) SONET LTD. engaged in the production of synthetic yarn is planning to expand its operations. In this context, the company is planning to import a multi-purpose machine from Japan at a cost of $¥$ (Yen) 2,460 lakhs. The company is in a position to borrow funds from its bank in India to finance import at the interest rate of $12 \%$ per annum with quarterly rests. A bank in Tokyo has also offered to extend credit of 90 days at $2 \%$ per annum against opening of an irrevocable letter of credit.
Other information is as under:
Present exchange rate: $₹ 100=¥ 246$
90 Days forward rate: $₹ 100=¥ 250$
Commission charges for letter of credit is @ $4 \%$ per annum.
Assume 1 year $=365$ days

## Required

Advise whether the offer from bank in Tokyo should be accepted.
6. (a) Bitrin Ltd. had only one Water Pollution Control Machine in this type of block of asset, with no book value under the provisions of the Income Tax Act, 1961 as it was subject to rate of depreciation of $100 \%$ in the very first year of installation.

Due to funds crunch Bitrin Ltd. decided to sell the machine which can be sold in the market, of any one for ₹ $5,00,000$ easily.
Understanding this from a reliable source Cetna Ltd. came forward to buy the machine for ₹ $5,00,000$ and lease it to Bitrin Ltd. for lease rental of ₹ 90,000 p.a. for 5 years. Bitrin Ltd. decided to invest the next sale proceed in a risk free deposit, fetching yearly interest of $8.75 \%$ to generate some cash flow. It also decided to relook the entire issue afresh after the said period of 5 years.
Another company, Delta Ltd. also approached Bitrin Ltd., proposing to sell a similar machine for ₹ $4,00,000$ to the latter and undertook to buy it back at the end of 5 years for ₹ $1,00,000$ provided the maintenance were entrusted to Delta Ltd. for yearly charge of ₹ 15,000 . Bitrin Ltd. would utilize the net sale proceeds of the old machine to fund this machine also this offer.

The marginal rate of tax of Bitrin Ltd. is $34 \%$ and its weighted average cost of capital is $12 \%$.
Discounting factors @ 12\%

| YEAR | $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0.893 | 0.797 | 0.712 | 0.636 | 0.567 |

## Required:

Which Company's proposal you should recommend to accept to the Company (Bitrin Ltd.)?
$1+3+1+2+1=8$
(b) MR. BOSTAN an investor is evaluating the prospects of investing in Stock COB. He has estimated the returns associated with this stock and also the returns associated with the Market Index based on the Subjective probability approach. His estimates are as follows:

| Economic Scenario | Probability | Returns Associated with (\%) |  |
| :--- | :---: | :---: | :---: |
|  |  | Stock - COB | Market Index |
| Recession | 0.20 | 18 | 15 |
| Normal : | 0.40 | 16 | 18 |
| Boom | 0.40 | 25 | 20 |

## Required:

Calculate the following:
(i) Expected Return of Stock-COB and Market.
(ii) Expected Standard Deviations of Stock-COB and Market.
(iii) The Co-variances between Return of Stock-COB and Market.
(iv) The Co-efficient of Corelation between the returns of Stock-COB and Market.
7. (a) PAZOMB LTD. (PL) exports edible oils to Middle-East and African Countries. In June, 2022 the company exported an consignment worth $\$ 6$ million to Zambia. The payment for the same is expected to realize during the month of September, 2022. The Company has entered into an option forward contract for delivery of $\$ 6$ million over the month of September.

The market quotes on June 30, 2022 at the time of entering into the contract were as follows:

| SPOT | $₹ / \$$ | $78.05 / 08$ |
| :---: | :---: | :---: |
| Forward | 1 Month | $23 / 25$ paise |
|  | 2 Month | $47 / 49$ paise |
|  | 3 Month | $70 / 72$ paise |

On September 2022 the Company approached the bank for extension of the contract by another two months that is for delivery during the month of November.
The market quotes on September 2022 were as follows:

| SPOT | ₹ $/ \mathbf{\$}$ | $\mathbf{7 8 \cdot 5 8 / 6 0}$ |
| :---: | :---: | :---: |
| Forward | 1 Month | $20 / 22$ paise |
|  | 2 Month | $37 / 39$ paise |
|  | 3 Month | $55 / 57$ paise |

On November, 2022 the company approached the bank to cancel the forward contract.
The exchange rates as on November, 2022 were as follows:

| SPOT | $₹ / \$$ | $\mathbf{7 9 \cdot 0 5 / 1 0}$ |
| :---: | :---: | :---: |
| Forward | 1 Month | $18 / 20$ paise |
|  | 2 Month | $33 / 35$ paise |

## Required:

Calculate the following:
(i) The forward rate to be quoted on June 30, 2022.
(ii) The exchange rate to be quoted by the bank on September, 2022 for the extension of the contract.
(iii) The amount of cash flows due to extension of the contract.
(iv) The exchange rate at which the forward contract to be cancelled on November, 2022.
(v) The amount of Cash flows due to cancellation of the contract
(Ignore FEDAI margin for merchant quotes.) $\quad 1+1+2+2+2=8$
(b) MS. HARSHITA, an Investor would like to construct a portfolio consisting of securities ALFA and GAMA such that $70 \%$ of the investment is made in the security that has the better return per unit of risk and the rest in the other security. She has collected the following information about the proposed investment.

|  | ALFA | GAMA |
| :--- | ---: | ---: |
| Standard Deviation | $15 \%$ | $20 \%$ |
| Expected Return | $20 \%$ | $30 \%$ |

The Co-efficient of Correlation between ALFA and GAMA is $0 \cdot 25$.

## Required:

(i) Calculate the expected return of the Portfolio desired to be constructed by Harshita.
(ii) Ascertain the expected return of Portfolio set on minimum Variance.
(iii) Find the Risk Factor of the Portfolios under (i).
8. Answer any four of out of the following five questions:
(a) Differentiate between Capital Market and Money Market with respect to the following aspects.
(i) Type of Investment
(ii) Participants
(iii) Regulators
(iv) Risk
(b) What are the factors to be considered in valuing an option under Binomial Tree Approach?
(c) Enumerate what are the Tools and Techniques used by RBI to maintain financial stability.
(d) State the role of Financial Intermediaries in Swap arrangement.
(e) List down what are participants in commodity future.

## SUGGESTED ANSWERS TO QUESTIONS <br> SECTION - A

1. 

(i) (A)
(ii) (B)
(iii) (C)
(iv) (B)
(v) (D)
(vi) (C)
(vii) (B)
(viii) (C)
(ix) (B)
(x) (A)

## SECTION - B

(Answer any five questions)

2 (a) :
(i)

## Joint Path

 Probability No.| 0.08 | 1 |
| :--- | :--- |
| 0.12 | 2 |
| 0.20 | 3 |

$2+5+(1 \mathrm{X} 3)=10$ Marks

Year 1
Decision Tree
(ii) The Decision Tree given above shows that there are six possible outcomes each represented by a path.
Expected NPV

| Path | NPV @ 12\% (a) | Joint Probability (b) | Expected NPV = ( a ) x (b) |
| :--- | ---: | ---: | ---: |
| 1. | $(225100)$ | 0.08 | $(18008)$ |
| 2. | $(145380)$ | 0.12 | $(17446)$ |
| 3. | $(65660)$ | 0.20 | $(13132)$ |
| 4. | 33200 | 0.24 | 7968 |
| 5. | 192640 | 0.30 | 57792 |
| 6. | 272360 | 0.06 | 16342 |
|  | 1.00 | 33516 |  |

(iii) If the worst outcome is realized, the Net present value (NPV) which the project will yield is Rs. (225100) Negative. Its probability is $8 \%$ and a Loss of Rs 18008 (Path -1)
(iv) The probability of having a Negative NPV is $(0.08+0.12+0.20)=0.40$ i.e. $40 \%$.
(v) Yes, the project will be accepted since the total expected Net present value (ENPV) is positive of Rs. 33516 based on Joint probability.

2 (b) :
Equivalent Annual Cost of New Machine

| Particulars | Rs |
| :--- | ---: |
| Cost of New Machine | 100000 |
| Add : P. V. of Annual Repairs Maintenance $10000 \times 5.3349$ | 53349 |
| Less :P. V. of Salvage Value at the end of 8 years (20000 x 0.4665). | 9330 |
| Equivalent Annual Cost | Rs 26996 |

Equivalent Annual Cost of (EAC) of keeping the existing Machine

| Year | 1 | 2 | 3 | 4 |
| :--- | ---: | :---: | :---: | :---: |
| P. V. of Salvage Value of Old Machine | 40000 | 25000 | 15000 | 10000 |
| Add $:$ P. V. of Annual Maintenance Cost <br> Annual Cost $\div 1.10$ | 9091 | 18181 | 27273 | 36364 |
| Less $:$ P. V. of Salvage Value at the end of the year <br> (P.V. $\div 1.10$ ) | 22727 | 13636 | 9091 | 0 |
|  | 26364 | 29545 | 33182 | 46364 |
| Equivalent Annual Cost : | 29000 | 32500 | 36500 | 51000 |

Recommendation:
The Company should replace the old Machine now, since the Equivalent Annual Cost of new machine at Rs 26996 is lower than the cost of using the existing Machine in the First year, Second year, third and Fourth year.

3 (a) :
3+4+3 = 10 Marks
Evaluation of Funds CMB, BCG and SFM.

| PARTICULARS | FUNDS |  |  |
| :--- | :---: | :---: | :---: |
| CMB | BCG | SFM |  |
| Fama's Net Selectivity [Net Gain] | $(9.6 \%)$ | $(2.80 \%)$ | $(5 \%)$ |
| Total Gain | $10.56 \%$ | $1.40 \%$ | $0.60 \%$ |
| Systematic Risk | $11.52 \%$ | $5.40 \%$ | $3 \%$ |
| Unsystematic Risk | $0.48 \%$ | $0.60 \%$ | $2 \%$ |

3 (b) :
NAV per Unit as on 31.03.2022 $=$ Rs 41.57

4 (a) :
2+2+2+2= 8 Marks
(i) The investor should purchase 0.50 share for every 1 Call Option. Or the investor should purchase 1 share for every 2 call options.
(ii) How the investor will be able to maintain his position if he purchase 0.50 share for 1 Call Option Written?
(a) If price of share goes upto 750 then value of purchased share will be : Rs. 275
(b) If price of Share Comes down to Rs 550 then Value of purchased share will be : Rs 275
(iii) The value of the option at the beginning of the period is $=$ Rs 38.10
(iv) Expected Return on the Call Option : $=83.73 \%$

4 (b) :
(i) Portfolio $\beta$ : 0.66
(ii) Systematic Risk:

$$
\begin{aligned}
& \text { GSD }-0.0016 \text { or } 0.16 \% \\
& \text { DGS }-0.0025 \text { or } 0.25 \% \\
& \text { BM }-0.0121 \text { or } 1.21 \%
\end{aligned}
$$

(iii) Systematic Variance of Portfolio: $=0.004356$ i.e. $0.4356 \%$
(iv) Portfolio variance on the basis of Markowitz Theory : $=0.03265$

5 (a):
$2+3+2+3=10$ Marks
(i) Portfolio Beta $\left(\beta_{p}\right)=1.1920$
(ii) Theoretical Value of the Future Contract for Contracts expiring in May and June :

Price of the May Contract : = Rs 10545 or Rs 10546
Price of the June Contract:= Rs 10722 or Rs 10723
Alternative Solution :
The price of May Contract : = Rs 10511 or Rs 10510
Price of June Contract : = Rs 10680 or 10681
(iii) No. of NIFTY Contracts required to sell to hedge until June in total Portfolio :
$=3$ Contracts
(iv) Proportion of Market Value of Investments in B Ltd., to the value of Total Investments Plus $10 \%$ Margin on Future :
$=0.3348$ i.e. $33.48 \%$

5 (b) :
2+4 = 6 Marks
Evaluation of Options:

| Particulars | Amount in Rs Lakhs |
| :--- | ---: |
| Option I |  |
| Financing Import by Borrowing @ 12\% interest rate p.a. |  |
| Total Cash Outflow (for borrowing funds from bank in India) |  |
| Option II |  |
| Offer from Foreign Branch | 1030 |
| Total Cost | Rs 999.15 Lakhs |

Recommendation:
Option II, i.e. Offer of foreign branch is cheaper \& better. Therefore the Offer from a bank in Tokyo should be accepted.

6 (a):
$1+3+1+2+1=8$ Marks
(i) First Option : Leasing from Cetna Ltd. :

The Net Present Value (NPV) is Rs 41675 Or Rs 41673
(ii) Second Option : Purchase from Delta Ltd. :

The Net Present Value (NPV) is Rs 53181 or Rs 53180
Recommendation:
The Proposal of Delta Ltd. may be recommended to accept to the Bitrin Ltd. Since in the said proposal Net present value (NPV) (gain) will be increased by ( $53181-41675$ ) $=$ Rs 11506.
(i) The expected rate of Return :

Stock COB : 20\%, Market : $18.20 \%$
(ii) Expected Standard deviation of :

Stock-COB : 4.15\%, Market $=1.83 \%$
(iii) Covariance (C.M.) $=5.20^{2}$
(iv) The Co-efficient of Correlation between Stock-COB and Market $=0.68$

7 (a) :

$$
1+1+2+2+2=8 \text { Marks }
$$

(i) The company obtained a forward cover for its receivable of US $\$ 6$ million on June 30 for delivery in September.
The Forward rate to be quoted is Rs 78.05
Add: 2 months premium since 0.47
The Dollar is at Premium
Rs. 78.52
(ii) The exchange rate to be quoted on September for delivery November is Rs $(78.58+0.37)=$ Rs 78.95
(iii) On September 01, the Company approach for extension by 3 month. The request of the Company is considered by cancelling at one month forward selling rate that is Rs $78.82(78.60+0.22)$.
The amount of Cash Flow due to extension of the Contract is as follows:
Bank buys Dollars under original contract at: Rs 78.52
Bank Sells under cancellation at: Rs 78.82
Difference payable by the Company is per $\$$ Rs 0.30
Amount of CASH FLOW due to extension of the contract is:
$0.30 \times 6$ million $=$ Rs 1.8 million
(iv) The Company approached for cancellation on November, 01 which means only cancellation by one month. The contract would be cancelled at one month forward selling rate prevailing on the date of cancellation.
That is $($ Rs $79.10+$ Premium Rs 0.20$)=$ Rs 79.30
(v) The amount of CASH FLOW due to Cancellation of Forward Contract is as follows :

Bank Sells under original contract at Rs 78.95
Bank Sells on Cancellation:
Rs 79.30
Amount payable by the Company is per \$
Rs 0.35
Total Cash Flow due to cancellation is ( 6 million $\times 0.35$ ) $=$ Rs 2.1 million

7 (b) :
(i) Expected Return of Desired Portfolio = 0.27 i.e. $27 \%$
(ii) Expected Return of Portfolio Set on minimum Variance $=23.158$ i.e. $23.16 \%$
(iii) Risk Factor of Portfolio under (i) $:=15.74$ i.e. $15.74 \%$

8: Answer any FOUR from the following five questions:
(a) Difference between Capital Market and Money Market :

| Aspect | Capital Market | Money Markets |
| :--- | :--- | :--- |
| Type of <br> investment | Debt and Equity Instruments, e.g., <br> Equity Shares, Preference Shares, <br> Debentures, Zero Coupon Bonds | Debt Instruments only, e.g., <br> Treasury Bills, Commercial <br> Papers, Commercial Bills, <br> Certificate of Deposits. |
| Participants | Retail investors, Institutional <br> investors (Mutual Funds), Financial <br> Institutions etc. | Bankers, Financial Institutions, <br> Reserve Bank of India, <br> Government |
| Regulators | SEBI Credit and Market Risk | RBI |
| Risk Credit and Market Risk |  |  | | Low Credit |
| :--- |
| involved |

(b) The factor to be Considered in Valuing an option under Binomial Tree Approach :

The following are the factors to be considered in valuing/pricing an option under the Binomial Tree Approach
(i) Current Spot Price of the underlying asset.
(ii) Exercise Price under the Options Contract.
(iii) Set of Expected Future Spot Prices - one above the Exercise Price and one below the Exercise Price.
(iv) Risk Free Rate of Return.
(v) Period to Expiry.
(c) Tools and techniques used by RBI to maintain financial stability:

The Reserve Bank makes use of a variety of tools and techniques to assess the build- up of systemic risks in the economy and to provide critical inputs in this respect to its policy making departments. The tools include:
(i) A Financial Stress Indicator - a contemporaneous indicator of conditions in financial markets and in the banking sector;
(ii) Systemic Liquidity Indicator for assessing stresses in availability of systemic liquidity;
(iii) A Fiscal Stress Indicator for assessing buildup of risks from the fiscal;
(iv) A Network Model of the bilateral exposures in the financial system - for assessing the interconnectedness in the system;
(v) A Banking Stability Indicator for assessing risk factors having a bearing on the stability of the banking sector; and
(vi) A series of Banking Stability Measures for assessing the systemic importance of individual banks.
(d) Role of Financial intermediaries in swap arrangements.
(i) Swap arrangements: Non-financial Companies do not get in touch directly to arrange a swap. They each deal with a financial intermediary such a Bank or other Financial Institution.
(ii) Contracts: The Financial Institution has two separate contracts, one with either party. Generally, the parties to the Swap arrangement will not know that the Financial Institution has entered into an offsetting swap with the other beneficiary.
(iii) Risk of Default: If one of the beneficiary Company defaults, the Financial Institution still has to honourits agreement with the other Company.
(iv) Compensation: Swaps are structured to ensure that the financial institution earns around 5\% on a pair of offsetting transactions. The margin of 5 basis points is partly to compensate the Financial Institution for the risk that one of the two beneficiaries will default on the swap payments.
(e) Participants In commodity Future:
(i) Farmers/Producers
(ii) Merchandisers/Traders
(iii) Importers
(iv) Exporters
(v) Consumers / Industry
(vi) Commodity Financers
(vii) Agriculture credit providing agencies
(viii) Corporate having price risk exposure in commodities.

