

FINAL EXAMINATION

December 2023

P-14(SFM)
Syllabus 2016**STRATEGIC FINANCIAL MANAGEMENT**

Time Allowed: 3 Hours

Full Marks: 100

*The figures in the margin on the right side indicate full marks.**All working must form part of the answer.**Wherever necessary, suitable assumptions may be made and clearly stated in the answer.**No present value or other statistical table will be provided 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, A & B. Section A is compulsory and contain questions 1 of 20 Marks.**Section B contains question 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. (a) Choose the correct option from the four alternatives given (1 mark is for the correct choice and 1 mark for justification/workings.) (You may present only the Roman Numeral, your choice and the reason/workings, without copying the question.)

2×10=20

- (i) MS. RATRI, a prospective investor has collected the following information pertaining to two securities A and B.

Particulars	Security A	Security B
Expected Return %	15	18
Standard Deviation of return %	18	22
Beta	0.90	1.40

Variance of returns on the Market Index is $225(\%)^2$. The correlation co-efficient between the returns on securities A and B is 0.75. The systematic Risk of a portfolio consisting of these two securities in equal proportions is

- (A) $24.63 (\%)^2$
(B) $125.78 (\%)^2$
(C) $297.56 (\%)^2$
(D) None of (A) , (B) and (C)

- (ii) The current market price of an equity share of THOMAS LTD., is ₹ 500. Within a period of 3 months, the maximum and minimum price of it is expected to be ₹ 600 and ₹ 300 respectively. What should be the value of a 3 months call option under "Risk Neutral" method at the strike rate of ₹ 550 if the risk free rate of interest to 8% p.a.? [Given $e^{0.02} = 1.0202$]
- (A) ₹ 23.34
(B) ₹ 34.31
(C) ₹ 43.21
(D) None of the above
- (iii) MS. MOU invested ₹ 50,000 in a mutual fund scheme – SX on 01.04.2022. The capital gain and dividend for the year ₹ 3 per unit which were reinvested at the year end (31.03.2023) NAV of ₹ 25. Mou had total units of 2,800 as on 31.03.2023. What was the NAV as on 01.04.2022?
- (A) ₹ 10
(B) ₹ 15
(C) ₹ 20
(D) None of the above
- (iv) MR. BUA is a forex dealer in India. Rates of Rupce and Euro in the International Market rate are US \$ 0.0124688 and US \$ 1.092694 respectively. What will be his direct quote of (€) euro to his customer?
- (A) ₹ 88.91
(B) ₹ 88.32
(C) ₹ 87.63
(D) ₹ 80.90

- (v) NOBON Ltd., has been evaluating investment in a project which will require ₹ 40 lakh capital expenditure on a new machinery. The Company expects the capital investment to provide annual Cash flows of ₹ 9 lakh per year after taxes indefinitely. The business risk of the investment decision requires a 15 per cent discount rate. The base case NPV for NOBON Ltd's project will be
- (A) ₹ 25 lakh
(B) ₹ 20 lakh
(C) ₹ 18.50 lakh
(D) None of the above
- (vi) The Stock of ANOS Ltd. (FV ₹ 10) quotes ₹ 500 on NSE and the 3 months future price quotes at ₹ 510. The borrowing rate is given as 15% p.a. What would be the theoretical price of 3 months ANOS Ltd. future if the expected annual dividend yield is 25% p.a. payable before expiry?
- (A) ₹ 540.50
(B) ₹ 516.25
(C) ₹ 510.50
(D) Insufficient data
- (vii) The Portfolio composition of Mr. SANU is given below:

(Amount in ₹ lakh)	
Equity	120
Cash/Cash equivalents	40
Total	160

The beta of the equity portion of the Portfolio is 0.85 and the current NIFTY future is at 4261.5. The multiple attached to NIFTY future is 100. If Mr. SANU purchases 23 future contracts, his Portfolio Beta will be

- (A) 1.05
(B) 1.12
(C) 1.20
(D) 1.25

(viii) Buying a call and put with the same expiry date, on the same stock with a different strike price is a

- (A) Strangle
- (B) Straddle
- (C) Strap
- (D) Strip

(ix) P and Q are two mutually exclusive projects. P has a higher initial fixed cost and will make a profit of ₹ 10,000 for a high sales volume and a loss of ₹ 4,000 for a low sales volume. For Q, the corresponding amounts would be a profit of ₹ 7,000 or a profit of ₹ 2,000. The probability of high sales volume is 60%. The expected value of perfect information is

- (A) ₹ 9,000
- (B) ₹ 6,800
- (C) ₹ 12,600
- (D) ₹ 10,200

(x) Which one of the following is true?

- (A) Systematic risk can be minimized by investing in many sectors like banking, real estate and food products.
- (B) Government securities are free from interest rate risk.
- (C) The market rewards an investor in proportion to the unsystematic risk that he is willing to take.
- (D) Systematic risk is independent of the industry to which a security belongs.

Section-B

Answer any five questions.

Each question carries 16 marks.

16×5=80

2. (a) Soneta Engineering Ltd. is considering to replace or repair a particular machine due to broken down. Last year the company incurred costing ₹ 2,00,000 to run and maintain. These costs have been increasing in real terms in recent years with the age of the machine. A further useful life of 5 years is expected, if immediate repairs of ₹ 1,90,000 are carried out. If the machine is not repaired it can be sold immediately to realize about ₹ 50,000 (Ignore loss/gain on such disposal).

Alternatively, the company can buy a new machine for ₹ 4,90,000 with an expected life of 10 years with no salvage value after providing depreciation on straight line basis. In this case, running and maintenance costs will reduce to ₹ 1,40,000 each year and are not expected to increase much in real term for a few years at least.

Soneta Engineering Ltd. expects a normal return of 10% per annum after tax as a minimum requirement on any new investment. Corporate tax rate is 50% and the company follows straight line depreciation method on fixed assets for tax purposes also.

(Given cumulative present value of ₹ 1 p.a. at 10 % for 5 years ₹ 3.791, 10 years ₹ 6.145)

Required:

- (i) **Evaluate** the existing proposal of repairing of the machine.
- (ii) **Assess** the alternative proposal to buy the new machine.
- (iii) **Which** alternative should the company choose?

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- (b) **Shivam Limited** is considering two mutually exclusive projects A and B. Project A costs ₹ 36,000 and project B cost ₹ 30,000. You have been given below the net present value probability distribution for each project.

Project A		Project B	
NPV estimates (₹)	Probability	NPV estimates (₹)	Probability
15,000	0.2	15,000	0.1
12,000	0.3	12,000	0.4
6,000	0.3	6,000	0.4
3,000	0.2	3,000	0.1

Required :

- (i) **Compute** the expected net present value of projects A and B.
- (ii) **Assess** the risk attached to each project, i.e. standard deviation of each probability distribution.
- (iii) **Identify** the profitability index of each projects.
- (iv) **Which** project do you recommend? State with reasons.

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3. (a) MR. KARUN has invested in three Mutual Fund schemes as per details below:

	Scheme A	Scheme B	Scheme C
Date of Investment	01-12-2022	01-01-2023	01-03-2023
Amount of Investment	₹ 5,00,000	₹10,00,000	₹ 5,00,000
Net Asset Value at entry date	₹ 10.50	₹ 10.00	₹ 10.00
Dividend received up to 31-03-2023	₹ 10,000	₹ 16,000	₹ 8,000
NAV as at 31.3.2023	₹ 10.40	₹ 10.10	₹ 9.80

Required:

- Assess the effective yield on per annum basis in respect of the three Schemes to Mr. Karun upto 31.03.2023 taking the year consisting of 365 days.
- Provide a brief comment on the course of action he should take for further period. (Calculation should be upto three decimal points.)

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- (b) The following are the details of three Mutual Funds of ABOX.M Ltd.

	Growth Fund	Balanced Fund	Regular Fund	Market
Average Return (%)	7	6	5	9
Variance	92.16	54.76	40.96	57.76
Coefficient of Determination	0.3025	0.6561	0.9604	

The yield on 182 days Treasury Bill is 9 per cent per annum

Required:

- Rank the funds as per Sharp's measure.
- Rank the funds as per Treynor's measure.
- Compare the performance with the market.

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4. (a) Mr. Rudson, a manager has a portfolio (with beta value 1) of ₹ 50 lacs consisting of 80 % in stocks and the rest in cash. He wishes to use index futures to alter his beta. Assuming that the current index is 4,700 and the index futures (lot of 200) is quoted at ₹ 4,800.

Required:

Explain his strategy if he wishes to

- Increase the portfolio beta to 1.60.
- Decrease the portfolio beta to 0.8.

If he desired the above beta values, what should he do if he may include G-sec in his portfolio to alter that beta instead of futures?

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- (b) **Ms. Darna** an analyst of VKC Securities Ltd., is evaluating the prospects of investing in two companies Sontex Ltd. and Dentex Ltd. The distribution of Conditional Return and explicit probability distribution of Stocks of Sontex Ltd. and Dentex Ltd. are as follows :

Probability	Conditional Returns (in %)	
	Sontex Ltd.	Dentex Ltd.
0.10	60	5
0.20	50	15
0.40	40	25
0.20	30	35
0.10	20	50

Required:

- Analyze the expected returns, standard deviations of returns for both the stocks and correlation co-efficient between these two stocks.
- Compare the risks and returns of these two stocks with a portfolio of these stocks in equal proportions and **comment** thereon.

8

5. (a) **Max Ltd.**, a manufacturing company has the following information about two types of raw materials used for manufacturing of its products.

Particulars	Material X	Material Y
Current market price (i.e. spot price)	₹ 75 per kg	₹ 85 per kg
3 months Futures Contract price	₹ 38.50	₹ 44.60
Carrying cost	4% p.a. continuous compounding	₹ 100 per quintal per quarter payable after 2 months
Contract size	500 kgs. per contract	500 kgs. per contract

Risk free interest rate is at 12% per annum.

Required:

Evaluate the course of action if the company enters into futures contract for Material X and Y.

[Given, $e^{0.04} = 1.0408$; $e^{0.02} = 1.0202$; $e^{0.03} = 1.03045$] 8

- (b) MR. BISAN had purchased a 3 month call option on the equity shares of Sont Ltd. for a premium of ₹ 30 each, the current market of the share is ₹ 500 and the exercise price is ₹ 530. He expects the price range between ₹ 480 to 580.

The expected share price of Sont Ltd. and related probability is given below:

	480	500	520	540	560	580
Expected Price (₹)	0.10	0.15	0.05	0.35	0.20	0.15

Required:

Analyze the following:

- (i) Expected share price at the end of 3 months.
- (ii) Value of call option at the end of 3 months, if the exercise price prevails.
- (iii) In case the option is held to its maturity, what will be the expected value of the call option?
- (iv) **Assess** the price of the shares quoted at the stock exchange to get the value of the call option as competed in (iii) above. 8

6. (a) ZNB Ltd. has taken a six month loan from its foreign Collaborator for USD 3 millions. Interest is payable on maturity @ LIBOR Plus 1 %. The following information is available.

Spot Rate	INR / USD	80.5275
6 months Forward Rate	INR / USD	80.4575
6 months LIBOR for USD	2% (p.a.)	
6 months LIBOR for INR	6% (p.a.)	

Required:

- (i) **Evaluate** Rupee requirements if forward cover is taken.
- (ii) **Advise** the Company on the forward cover.
- (iii) **Mention** your opinion if spot rate of INR / USD is 80.4275. 8

- (b) **Rongal Ltd.** an Indian Company exports cotton garments to U.S. during the year 2022-23. It has exported 120000 pieces of garments at an average price of \$ 20 per piece. Average cost of producing each piece is ₹ 550 for the company. The elasticity of demand for the company's product in the U.S market is 1.5.

Prevailing Rupee-Dollar exchange rate during the last year was ₹ 80. In the current year Rupee-Dollar exchange rate is expected to depreciate to ₹ 81.

Required:

- Assess the change in profit due to the transaction exposure.
- Assess the change in profit due to economic exposure, if the company passes the benefit of depreciation on to buyer.

4+4=8

7. (a) **RONB**, a Company is considering an option to purchase a certain machine versus leasing it. The cost of the machine is ₹ 21,20,000 with a useful life of 5 years after which it will fetch a scrap value of ₹ 1,20,000. Depreciation will be the purchase value less scrap, written off uniformly each year. Maintenance expenses will be ₹ 40,000 every year. If leased, the lessor will maintain the machine and collect annual year end lease rents of ₹ 7,20,000. Assume that corporate tax is 25% for business and long term gains. The capital of the company consist of 80% equity (with cost 11%) and 20% debt (borrowed at an interest rate of 8% p.a). Assume cash flows occur at year ends.

Required:

Analyze the purchase Vs lease option to evaluate the proposal. Show calculations to the nearest rupee.

Given:	P.V. Factor		Annuity Factor	
	4	5	4	5
Find of YR Rate				
10 %	0.683	0.621	3.170	3.791
10.8 %	0.664	0.599	3.116	3.715
11.20 %	0.654	0.588	3.089	3.677
12 %	0.636	0.567	3.037	3.605

- (b) MR. RAJON, an investor is interested to construct a portfolio of securities ALFA and GAMA. He has collected the following information about the proposed investment.

	ALFA	GAMA
Expected return	20%	25%
σ (Risk)	12%	16%

Co-efficient of Correlation (r) between ALFA and GAMA is 0.16. He wants to constitute only 3 portfolios of ALFA and GAMA as follows:

- (1) All funds invested in ALFA
- (2) 50 % of funds in ALFA and 50% in GAMA
- (3) 75% of funds in ALFA and 25% in GAMA

Required:

Analyze the following:

- (i) Expected return under different portfolios
- (ii) Risk factor associated with these portfolios
- (iii) Which portfolio is the best from the view – point of risk?
- (iv) Which portfolio is the best from the view – point of return?

2×4=8

8. Answer any four out of the following five questions:

4×4=16

- (a) **State** the features of the call money market on the following aspects :

- (i) Purpose
- (ii) Security
- (iii) Call rate
- (iv) Lending (Name four lenders)

- (b) **Distinguish** between commodity futures and financial futures with respect to the following aspects:

- (i) Valuation
- (ii) Delivery and Settlement

- bn
- (c) **Illustrate** the types of Liquidity Risk.
 - (d) **Enumerate** four features of Foreign Currency Convertible Bonds. (FCCB)
 - (e) **Write down** the main activities of Reserve Bank of India (RBI).
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PAPER – 14 : STRATEGIC FINANCIAL MANAGEMENT

SUGGESTED ANSWERS

SECTION – A

1.

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

SECTION – B

2. (a)

- (i) Total net equivalent cash out flows p.a. = ₹ 125059
- (ii) Total net equivalent cash out flows p.a. = ₹ 117103

(iii) **Advice:**

Since, net equivalent cash outflows p.a. for buying a new machine ₹ 117103 is less than net equivalent cash outflows of ₹ 125059 for repairing of an existing machine. Therefore, it is advisable that the company should go for buying a new machine

2. (b)

(i) **Expected net present value of Projects:**

Project - A = ₹ 9000

Project - B = ₹ 9000

(ii) **Standard Deviation of project:**

Project A = ₹ 4449.72

Project B = ₹ 3794.73

(iii) **Profitability Index of each project:**

Project A = 1.25

Project B = 1.30

(iv) **Recommendation:**

Measurement of risk is made by the possible variation of outcomes around the expected value and the decision will be taken in view of the variation in the expected value. Where two projects have the same expected value, the decision will be the project which has smaller variation in expected value. In this case, project B is preferable because the possible profit which may occur is subject to less variation (or dispersion). Much higher risk is lying with Project A.

- 3. (a)**
- (i) Effective Yield(%p.a.)**
- A= 3.160%
- B = 10.544%
- C = (4.710%)
- (ii) Comments:**
- Mr. KARUN should try to increase his investment in Scheme B, because it has highest effective yield per annum from the Mutual fund Portfolio.

- 3. (b)**
- (i) Rank:**
- Growth = 1st
- Balanced = 2nd
- Regular = 3rd
- (ii) Rank:**
- Growth = 1st
- Balanced = 2nd
- Regular = 3rd
- (iii) Conclusion:**
- Market has Treynor and Sharpe ratio of 0 times. However, the ratio of other fund is negative we conclude funds are underperformed the market.

- 4. (a)**
- (i)** Increase portfolio beta to 1.6 = 3.125 contracts have to be purchased.
- (ii)** Decrease to 0.8 = 1.042 contracts

Instead of futures, he can buy Govt. securities to decrease his beta or increase his investment in shares to increase the beta. But this will entail more investments, unlike futures, where margins are sufficient.

He cannot merely sell the current shares to increase beta. Even if he invests the entire cash in the current shares, his beta will remain at 1.25. To increase beta, he has to buy riskier shares from the market such that

$$4000000 \times 1.25 + 1000000 \times x = 5000000 \times 1.6$$

$$1000000 \times x = 3000000 \text{ or } x = 3.$$

He must purchase shares for 10 lacs with beta = 3, if he is considering only the 10 lacs is to be altered into purchase of other shares.

Alternatively, he can use the 10 lacs and sell some of the shares and buy shares with higher beta to make the weighted beta = 1.6.

- 4. (b)**
- (i)**
- | | |
|--|-----------|
| Expected Return of Sontex | = 40% |
| Standard deviation of Returns of Sontex | = 10.95 % |
| Expected Return of Dentex | = 25.5 % |
| Standard deviation of Returns of Dentex | = 11.93% |
| Correlation co-efficient between Sontex and Dentex Stocks -0.995 or -1 | |

(ii)

	Sontex Stock	Dentex Stock	Portfolio of Two Stocks
Expected Return	40%	25.5%	32.75%
Risk (σ)	10.95%	11.93%	0.49%

Comments:

The portfolio of two Stocks results in risk reduction (0.49%) by the combination of two risky Securities (Sentex and Dentex).

5. (a)

Future Contract For Material X.

Theoretical Forward Price per kg	₹ 78.06
TFP per lot Size of 500 kg	₹ 39.03 Thousand
3 Months Future Contract	₹ 19.25 Thousand
TFP Vs. AFP	AFP is lower
Valuation in Future Market	Undervalued
Recommended Action	Buy Future, Sell Spot

Future Contract For Material Y.

Spot Price	₹ 85 per kg
Storage Cost (Rate) Payable after 2 months	₹ 100 per Quintal per Quarter or ₹ 500 per lot
Tenor / Time period in years	2 months or 0.1667 year
Present value of Storage Cost:	₹ 490.10

Adjusted Current Spot Price of Material Y	₹ 42.99 Thousand
Theoretical Forward Price (TFP)	₹ 44.299 Thousand
3-MonthsFuture Contract	₹ 22.30 Thousand
TFP Vs AFP	AFP is lower
Valuation in Future Market	Undervalued
Recommended Action	Buy Future, Sell Spot

5. (b)

- (i) Expected Share Price = ₹ 537
- (ii) Value of Call Option = NIL
- (iii) If the option is held till maturity the expected Value of Call Option = ₹ 17
- (iv) Price to be quoted at the stock exchange to get the value of the call option = ₹ 547.

6. (a)

- (i) Rupee requirement if forward cover is taken = ₹ 244993087.50
- (ii) Forward Rate as per Interest Rate Parity after 6 Months is expected to be = ₹ 82.1221/US\$
The Company should take forward cover because as per Interest Rate Parity, the rate after 6 months is expected to be higher than forward rate.
- (iii) However, if spot rate is 80.4275, the expected rate as per Interest Rate Parity shall be = 82.0201/US\$
Thus, still the company should take forward cover.

6. (b)

- (i) Current Profit = ₹ 1260 Lakhs
Profit if Rupee depreciates = ₹ 1284 Lakhs
So, increase in profit due to depreciation of Rupee = ₹ 24 Lakhs
- (ii) Profit = ₹ 1283.625 Lakhs
So, increase in profit due to Economic Exposure = ₹ 23.625 Lakhs

7. (a)

Cash out flows in Purchase Option: ₹ 1780110

Cash out flows in Leasing Option: ₹ 2047140

Since the purchase option is better and economical than that of leasing option the company should choose the purchase option.

7. (b)

(i) Expected return under different portfolios :

- Portfolio (1) = 20%
Portfolio (2) = 22.50%
Portfolio (3) = 21.25%

(ii) Risk factor associated with different portfolios :

- Portfolio (1) = 12%
Portfolio (2) = 10.74%
Portfolio (3) = 10.42%

(iii) The best portfolios from the viewpoint of Risk is the one with least risk factor, i.e. 10.42%, i.e. Portfolio (3) = 75% fund in ALFA and 25% fund in GAMA.

(iv) The best portfolios from the viewpoint of Return is the one which has the best return, i.e. 22.50% i.e. Portfolio (2) = 50 % in ALFA and 50% fund in GAMA.

8. (a)

Call Money Market – Features:

(i) Purpose:

1. Close to Money
2. Provide liquidity for Government and banks
3. Low risk
4. Short term
5. Banks use this for CRR or SLR requirements
6. Bill market, stock Exchange Dealers and high net worth individuals
7. To meet sudden demand for funds arising out of large outflows.

(ii) Securities: Unsecured; No collateral security.

(iii) Call rate: Varies as per market demand and supply conditions. It is high during March (even around 25 %) and low in April, October, etc. (even as low as 7 %). It also varies according to place - It is higher in Kolkata and lower in Mumbai.

(iv) Lenders: RBI, Banks, Primary Dealers, Financial Institutions like LIC, UTI, GIC, IDBI, NABARD, ICICI, Specified All India Financial Institutions, Mutual Funds.

8. (b)

Difference between Financial futures and commodity futures on the following basis:

- (i) **Valuation:** Financial futures are easier to understand as the cost of carry model for its valuation applies. The argument of arbitrage also holds because of the absence of convenience yield in financial futures. Financial futures involve financial instruments which do not have consumption value. The consumption value makes valuation of futures contracts on commodities difficult.
- (ii) **Delivery and Settlement:** The provisions of delivery are applicable equally to commodities and financial futures. In case of financial futures delivery of underlying assets is prompt and hassle free, and so is its settlement. Further, there are no costs of transportation, storage, or insurance, etc. involved in financial futures. For futures on financial assets the price adjustment on account of discrepancy in quality of what was contracted and what is being delivered, is not required. Quality of underlying asset is immaterial in case of financial products, whereas there is ample scope of controversy over quality in case of commodity futures. In case of futures on indices or intangibles the underlying is non-deliverable and futures contracts on them are necessarily cash settled.

8. (c)

Types of Liquidity Risk:

Market liquidity - An asset cannot be sold due to lack of liquidity in the market - essentially a sub-set of market risk. This can be accounted for by:

- Widening bid / offer spread
- Making explicit liquidity reserves
- Lengthening holding period for VaR calculations

Funding liquidity - Risk that liabilities:

- Cannot be met when they fall due
- Can only be met at an uneconomic price
- Can be name-specific or systematic

8. (d)

Features of Foreign Currency Convertible Bonds (FCCB)

- FCCB can be either unsecured or secured. But, in practice most of the FCCB issued in India are unsecured
- FCCB issues have a 'Call' and 'Put' option to suit the structure of the Bond. Both the options are subject to RBI guidelines.
- Public issue of FCCB shall be through reputed lead managers and Private placement is permitted subject to certain conditions.
- It is also possible to issue zero coupon Foreign Currency Convertible Bonds and in this case, the holders of the bond are generally interested to convert the bonds into equity.
- The yield to maturity of FCCB normally ranges 2-7%.
- FCCB are generally listed to stock exchange to increase its liquidity. Credit rating of bonds is not mandatory. But, rating can help better marketing of the bonds.
- FCCB Issue related expenses shall not exceed 4% of issue size and in case of private placement, shall not exceed 2% of the issue size.

8. (e)

Main Activities of Reserve Bank of India (RBI)

The Reserve Bank is the umbrella network for numerous activities, all related to the Nation's Financial Sector, encompassing and extending beyond the functions of a typical central bank.

- Monetary Authority
 - Issuer of Currency
 - Banker and Debt Manager to Government
 - Banker to Banks
 - Regulator of the Banking System
 - Manager of Foreign Exchange
 - Maintaining Financial Stability
 - Regulator and Supervisor of the Payment and Settlement Systems
 - Developmental Role
-