Indian Institute of Technology, Kharagpur

Date FN/AN Time: 3 hours Full Marks: 50 No of Students: 57
End-Spring Semester 2023 Deptt: HSS Sub No: HS41004
5-Year Integrated M.Sc in Economics Sub Name: Banking Theory and Practice

Answer all the questions. (Total Pages: 2; Total No of Questions: 8)

Q1: Explain the various active and passive investment strategies of followed by commercial banks to manage their investments.

(6 Marks)

Q2: (i) How commercial banks hedge the interest rate risk using the futures and option in various dollar gap and duration gap positions?

(4 Marks)

(ii) Define swap and its uses with the examples.

(4 Marks)

Q3:(i) Consider the following excerpt from the Financial Statement of Bank ABC. Find out the duration gap.

ASSET				**LIABILITY**			
Composition of Assets	Market Value of Assets	Interest Rate of Each Assets (%)	Average Duration of Each Asset (years)	Composition of Liabilities and Equity Capital	Market Value of Liabilities	Interest Rate of Each Liability (%)	Average Duration of Each Liability (in years)
Treasury Securities	100	10	7.5	Certificate of deposits	50	6	2.1
Municipal Bonds	40	6	1.5	Other time deposits	150	7.2	2.75
Business Loans	120	12	1	Subordinated notes	50	9	3.9
Consumer Loans	90	15	0.6	Stockholder's Equity Capital	150		
Real Estate Loans	50	13	2.2				
Total	400			Total	400		

(3 Marks)

(ii) Bank ABC reports a Duration of Assets of 1.425 years, and a Duration of Liabilities of 2.785 years. It reported a total asset worth INR 500 million and a total liability worth INR 250 million. If interest rates on both assets and liabilities rises by 2%, what will be the change in value of net worth? (Assume the average initial interest is 8%)

(3 Marks)

Q4: (i) The interest rate on a certificate having a value of INR 1000 after 1 year is 17% p.a. Assuming quarterly reinvestment, what will be the issue price of the cash certificate?

(3 Marks)

(ii) Joy invested in a recurring deposit scheme. He paid a monthly installment of INR 5000 for 12 months. If the interest rate applied is 11 percent per annum and computed quarterly. Find the maturity value.

(3 Marks)

???

Q5: Bank XXX has raised a total of INR 500 million, including INR 120 million in checkable deposits, INR 280 million in time and savings deposits, INR 70 million borrowed from the money market, and INR 30 million from owners' equity capital. The interest and non interest costs spent to attract the checkable deposits total 10% of the amount of checkable deposits. The thrift deposits and money market borrowings each cost 11% of funds raised in interest and non-interest expenses. Equity capital costs an estimated on 22% of any new equity raised. The reserve requirements, deposit insurance fee and uncontrolled balances (float) reduce the amount of money actually available for investing in interest-bearing assets by 15% for checkable deposits, 5% for thrift deposits, and 2% for borrowings in the money market. Given this scenario, what will be the institute's weighted average before-tax cost of funds?

(6 Marks)

?

Q6: (i) Consider the following information pertaining to a commercial bank ABC. Using the Basic Indicator Approach, find the amount of operational risk of the bank.

	Annual Gross Income (in Million)		
	Yr-3	Yr-2	Yr-1
Bank ABC	INR 280	INR 100	INR 220

(3 Marks)

(ii) The following information is available for Bank XYZ

Items	Value in INR Million
Hot Money	40
Vulnerable fund	60
Stable fund	300
Quick Fund	100
Total Loan	135
Recent loan	140

Legal reserve requirements =2.5% and Growth rate of loan =10%. Using structure of funds approach, find the liquidity requirement for Bank. **(3 Marks)**

Q7: The following information was reported in the latest financial statement of Bank XYZ

Balance Sheet Items	**INR Amount**
Cash	9,50,00,000
Domestic interbank deposits	15,00,00,000
U.S. Treasury securities	27,00,00,000
Residential real estate loans	39,50,00,000
Commercial loans	54,00,00,000
Total Assets	1,45,00,00,000
Total liabilities	1,23,00,00,000
Total capital	22,00,00,000
Off-Balance Sheet Items	**INR Amount**
Standby letters of Credit backing the issue of state and local government general obligation bonds	10,70,00,000
Long term unused loan commitments	16,50,00,000
Types of Capital	**INR Amount**
Common stock (par value)	2,50,00,000
Qualifying noncumulative perpetual preferred stock	3,50,00,000
Undivided profits	5,00,00,000
Allowance for loan losses	4,50,00,000
Subordinated debt capital	4,00,00,000
Intermediate-term preferred stock	2,50,00,000

Using the above information pertaining to bank XYZ, calculate the total risk weighted assets and value of Tire-I capital held by the bank.

(6 Marks)

Q8: (i) The following information is available for a bank: Loan= Rs. 1,000,000, average contractual rate: 14%, probability of repayment= 90%, recovery rate= 70%. Using Cost plus pricing model, find the expected return of the loan.

(3 Marks)

(ii) Consider the following information pertaining to Bank XXX:

Cost of funds	8.50%
Provision for loan loss	1.50%
Direct Expenses	0.50%
Indirect Expenses	0.25%
Overhead expenses	0.25%
Allocated equity to loan ratio	9.00%
Opportunity cost of capital	18.00%
After tax capital charge	1.620%

If the tax rate for the bank A is 0.3 for bank to earn the target return on equity of 18%, what should be the loan rate? **(3 Marks)**