STRATEGIC FINANCIAL MANAGEMENT

Time Allowed: 3 Hours **Full Marks: 100**

The figures in the margin on the right side indicate full marks.

SECTION – A (Compulsory)

1. Choose the correct option: **[15 x 2 = 30]**

(i) Which of the following is not a component of Digital Finance Ecosystem?
- **A. Digital Infrastructure**
- **B. Digital Money**
- **C. Digital Liabilities**
- **D. Digital Financial Services**

(ii) If project cost = ₹12,000, Annual cash flow = ₹4,500 Cost of capital = 14%, life = 4 years, PVIFA (14%, 4) = 2.9137, then the sensitivity with respect to the project cost is
- **(a) 9.27 %**
- **(b) 10.27 %**
- **(c) 9.72 %**
- **(d) 10.72 %**

(iii) Which of following clearly define the Leasing services?
- **A. One party agrees to rent property owned by another party**
- **B. It guarantees the lessee, also known as the tenant, use of the asset**
- **C. It guarantees the lessor, regular payments from the lease**
- **D. All of the above.**

(iv) Under "securitisation process", _____ are instruments which issued subsidiary company in respect of receivables of holding or parent company.
- **(a) Pass through certificate**
- **(b) Pay through certificate**
- **(c) Preferred stock certificate**
- **(d) None of these**

(v) One year ago, you purchased an annual coupon bond for ₹817.84. At that time the bond had a maturity of 15 years, a face value of ₹1,000, a coupon rate of 5% and a yield to maturity of 7%. One year later, the yield to maturity increased to 7.5%. What is the total rate of return for the year?
- **A. 9.79 %**
- **B. 2.44 %**
- **C. 7.50 %**
- **D. 3.75 %**

(vi) Which of the following does not form a part of company analysis?
- **A. A trend analysis of the company's market share**
- **B. Life cycle analysis of the industry**
- **C. Leverage and coverage ratio analysis**
- **D. Cost structure and break even analysis**

(vii) A closed-end fund has a portfolio currently worth ₹350 million. The fund has liabilities of ₹5 million and 17 million units outstanding. What is the net asset value of the fund?

(a) ₹20.28
(b) ₹20.29
(c) ₹20.59
(d) ₹29.17

(viii) In July, the one-year interest rate is 4% on Swiss Francs and 13% on US dollars. If the current exchange rate SFr 1=$0.63, what is the expected future exchange rate in one year?

A. $ 0.5561
B. $ 0.6845
C. $ 0.8542
D. $ 0.8283

(ix) The feature of the general version of the arbitrage pricing theory (APT) that offers the greatest potential advantage over the simple CAPM is the:

A. Identification of anticipated changes in production, inflation, and term structure of interest rates as key factors explaining the risk return relationship
B. Superior measurement of the risk free rate of return over historical time periods
C. Variability of coefficients of sensitivity to the APT factors for a given asset over time
D. Use of several factors instead of a single market-index to explain the risk-return relationship

(x) A portfolio manager realized an average annual return of 15%. The beta of the portfolio is 1.2 and the standard deviation of return is 25%. The average annual return for the market index was 11% and the standard deviation of the market returns is 20%. The risk-free rate is 4%. The Sharpe ratio for the portfolio is

A. 0.16
B. 0.44
C. 0.55
D. 0.64

(xi) Presently, a company's share price is ₹120. After 6 months, the price will be either ₹150 with a probability of 0.8 or ₹110 with a probability of 0.2. A call option exists with an exercise price of ₹130. What will be the expected value of call option at maturity date?

(a) ₹20
(b) ₹16
(c) ₹12
(d) ₹10

(xii) A Shares of C Ltd. is traded at ₹1,150. An investor is bullish about the market. He buys two one-month call option contracts (one contract is 100 shares) on C Ltd. with a strike price of ₹1,195 at a premium of ₹35 per share. Three months later, if the share is selling at ₹1240 what will be net profit/loss of the investor on the position?

(a) ₹1000
(b) ₹1200
(c) ₹1500
(d) ₹2000

(xiii) The transaction where the exchange of currencies takes place 2 days after the date of the contract is known as
- A. Ready transaction
- B. Value today
- C. Spot transaction
- D. Value tomorrow

(xiv) An Indian Company is planning to invest in USA. The annual rates of inflation are 8% in India and 3% in USA. If the spot rate is currently ₹73.50/1$, what spot rate can you expect after 2 years, assuming the inflation rates will remain the same over 2 years?
- (a) ₹66.85
- (b) ₹80.81
- (c) ₹70.09
- (d) ₹77.07

(xv) If ROA is 0.195 and the leverage factor of 1.38, the ROE of the company is
- (a) 0.279
- (b) 0.283
- (c) 0.254
- (d) 0.269

Answer:

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)
c	a	d	c	b	b	b	b	d	b	b	d	c	b	d

SECTION – B

(Answer any five questions out of seven questions given. Each question carries 14 marks.)

[5 x 14 = 70]

2. (a) X Ltd. has ₹20,00,000 allocated for capital budgeting purposes. The following proposals are available:

Projects	Initial Outlay (₹)	Total PV (₹)
A	6,00,000	7,32,000
B	3,00,000	2,85,000
C	6,00,000	8,40,000
D	9,00,000	10,62,000
E	4,00,000	4,80,000
F	8,00,000	8,40,000

Recommend which of the above investments should be undertaken. Assume that the projects are divisible. [7]

(b) The Sharda Beverages Ltd has taken a plant on lease, valued at ₹20 crores. The lease arrangement is in the form of a leveraged lease. The Kuber Leasing Limited is the equity participant and the Hindusthan Bank Ltd. (HBL) is the loan participant. They fund the investment in the ratio of 2:8. The loan from HBL carries a fixed rate of interest of 19 percent, payable in 6 equated annual instalments. The lease term is 6 years, with lease rental payable annually in arrears.

A) Calculate the equated annual instalment from the point of view of HBL.

B) If the lease rate is unknown, and HBL's per-tax yield is 25 percent, calculate the minimum lease rent that must be quoted.

[7]

Answer:

(a) Calculation for NPV, Profitability Index and Ranking:

Projects (1)	Initial outlay (2)	Total PV (3)	PI (4)=(3)/(2)	Ranking (5)	NPV (6)=(3)-(2)
A	6,00,000	7,32,000	1.22	2	1,32,000
B	3,00,000	2,85,000	0.95	6	-15,000
C	6,00,000	8,40,000	1.4	1	2,40,000
D	9,00,000	10,62,000	1.18	4	1,62,000
E	4,00,000	4,80,000	1.2	3	80,000
F	8,00,000	8,40,000	1.05	5	40,000

Selection of the projects based on PI ranking:

Ranking	Projects	Initial outlay (₹)	Cumulative Initial Outlay (₹)	NPV(₹)
1	C	6,00,000	6,00,000	2,40,000
2	A	6,00,000	12,00,000	1,32,000
3	E	4,00,000	16,00,000	80,000
4	D	4,00,000 (Balancing Figure)	20,00,000	72,000* $\left(1,62,000 \times \frac{4,00,000}{9,00,000}\right)$
Total		20,00,000		5,24,000

Note: * Project D has been accepted in part as the funds available after accepting project E is not sufficient to accept D in full. NPV has been calculated proportionately.

(b)

Cost of the asset	₹20 cr
Debt Equity ratio	2: 8
Loan raised	(20 × 8/10) = ₹16cr
Rate of interest	19%

A. Calculation of annual instalment

$X \times PVCF_{6yr,\ 19\%} = ₹16$ cr.

X = ₹16 cr/3.4098

X = 4,69,23,573

So, equated annual instalment is ₹4,69,23,573

B. Let the lease rent be X

Net outflow = Lease rent – Loan instalment = X – 46923573

Then,

(X – 46923573) $PVCF_{6yr, 25\%}$ = 40000000

X = 6,04,76,463

Minimum lease rental to be quoted is ₹6,04,76,463

3. (a) Cyber Company is considering two mutually exclusive projects. Investment outlay of both the projects is ₹5,00,000 and each is expected to have a life of 5 years. Under three possible situations their annual cash flows and probabilities are as under:

		Cash Flow	
Situation	**Probabilities**	**Project A**	**Project B**
Good	**0.3**	**6,00,000**	**5,00,000**
Normal	**0.4**	**4,00,000**	**4,00,000**
Worse	**0.3**	**2,00,000**	**3,00,000**

The cost of capital is 9 per cent, recommend which project should be accepted and explain with workings. [7]

(b) From the following Trial Balance for the year ending 31 March 2024 and other relevant information, calculate the value of the business on the basis of values of equity shares of Bhakti Ltd. as on 1st April, 2024 assuming the PE ratio to be 10.

Particulars	Dr. (₹)	Cr. (₹)
Fixed Assets (Cost Price)	**1,00,000**	
Equity Share Capital (₹10)		**3,00,000**
Reserve and Surplus		**1,80,000**
Provision for Depreciation		**30,000**
Purchase/sales	**8,00,000**	**10,00,000**
Opening stock	**1,00,000**	
Salaries	**80,000**	
Rent and rates	**11,000**	
Fixed selling expenses	**10,000**	
Variable selling expenses	**9,000**	
Debtors /Creditors	**2,60,000**	**80,000**
Bank	**2,10,000**	
Bad debts	**10,000**	
Total	**15,90,000**	**15,90,000**

Stock is ₹1,50,000 as on 31 March, 2024.

Depreciation is provided at 10 per cent p.a. on cost price, ₹10,000 worth of fixed assets is to be added during the middle of 2024. During the year ended 31st March, 2025:

(i) Sales are likely to go up by 10 per cent at the same price

(ii) The purchase price may go up by 2 per cent

(iii) Stock holding is likely to increase by ₹65,000

(iv) Bad debts are expected to go up by 50 per cent

(v) Salaries and fixed selling expenses are likely to grow up by 10 per cent and 5 per cent respectively and

(vi) The Variable selling expenses are estimated to be higher by 10 per cent per unit, Ignore tax. **[7]**

Answer:

(a) Project A

Expected Net Cash flow (ENCF) = 0.3(6,00,000) + 0.4(4,00,000) + 0.3(2,00,000) = 4,00,000

$\sigma^2 = 0.3(6,00,000 - 4,00,000)^2 + 0.4(4,00,000 - 4,00,000)^2 + 0.3(2,00,000 - 4,00,000)^2$

$\sigma^2 = 24,00,00,00,000$

$\sigma = 1,54,919.33$

ENPV = 4,00,000 × 3.890 = 15,56,000

NPV = 15,56,000 – 5,00,000 = 10,56,000

Project B

Expected Net Cash flow (ENCF) = 0.3 (5,00,000) + 0.4 (4,00,000) + 0.3 (3,00,000) = 4,00,000

$\sigma^2 = 0.3(5,00,000 - 4,00,000)^2 + 0.4(4,00,000 - 4,00,000)^2 + 0.3(3,00,000 - 4,00,000)^2$

$\sigma^2 = 6,00,00,00,000$

$\sigma = 77,459.66$

ENPV = 4,00,000 × 3.890 = 15,56,000

NPV = 15,56,000 – 5,00,000 = 10,56,000

Recommendation:

NPV in both projects being the same, the project should be decided on the basis of standard deviation and hence project 'B' should be accepted having lower standard deviation, means less risky.

(b)

(i)	Year ended 31st March, 2024:		₹
	Cost of goods sold (COGS)	:	7,50,000
	Sales	:	10,00,000
	COGS	:	75% of the sales
(ii)	Year ended 31st March, 2025:		₹
	Sales	:	11,00,000
	COGS (had there been no change in cost)	:	8,25,000

As the cost has increased by 2%, the COGS for the year 31.3.2025: 1,50,000 + 6,75,000 (1.02) = 8,38,500

Profit and Loss account for the year ended 31.3.2025

Particular	Amount (₹)	Particular	Amount (₹)
COGS	8,38,500	Sales	11,00,000
Depreciation	10,750		
Salaries	88,000		
Fixed Selling Expenses	10,500		
Rent and Rates	11,000		

Bad debts	15,000		
Variable selling expenses	10,890		
Net Profit	1,15,360		
Total	11,00,000	Total	11,00,000

EPS= 1,15,360/30,000 = 3.8453

Market price of the share: EPS × PE ratio = 3.8453 × 10 = ₹38.453.

4. (a) You have been reading about Software Ltd. which currently retains 90 per cent of its earnings (₹5 a share this year). It earns a ROE of almost 30 percent.

(i) Assuming a required rate of return of 14 percent, calculate the amount you pay for the share on the basis of earnings multiplier model.

(ii) Calculate the amount you pay for the stock if its retention rate was 60 percent and its ROE was 19 percent. [7]

(b) Four friends S, T, U, and V have invested equivalent amount of money in four different funds in tune with their attitude to risk, S prefers to play aggressive and is keen on equity-funds, T is moderately aggressive with a desire to invest upto 50% of his funds in Equity, whereas U does not invest anything beyond 20% in Equity. V, however, relies more on movement of market, and prefers any fund which replicates the market portfolio.

Their investment particulars, returns therefrom and Beta of the fund are given below —

Fund Invested	Return for the year	Beta Factor
Money Multiplier Fund (100% Equity)	**23.50%**	**1.80**
Balanced Growth Fund (50% Equity - 50% Debt)	**16.50%**	**1.25**
Safe Money Fund (20% Equity and 80% Debt Funds)	**12.50%**	**0.60**

If the Market Return was 16% and the Risk Free Return is measured at 7%, examine which of the four friends were rewarded better per unit of risk taken. [7]

Answer:

(a) (i) Required rate of return (k) = 14%

Return on Equity (ROE) = 30%

Retention Rate (RR) = 90%

Earnings per share = ₹5.00

Then growth rate = RR × ROE = 0.90 × 0.30 = 0.27

$$P/E = \frac{D/E}{k - g} = \frac{0.10}{0.14 - 0.27}$$

Since, the required rate of return (k) is less than the growth rate (g), the earnings multiplier cannot be used (the answer is meaningless).

(ii) However, if ROE = 0.19 and RR = 0.60

then, Growth rate = 0.60 × 0.19 = 0.114

$$P/E = \frac{0.40}{0.14 - 0.114} = \frac{0.40}{0.026} = 15.38$$

If next year's earnings are expected to be: ₹5.57 = ₹5.00 × (1 + 0.114)

Applying the P/E ratio: Price = 15.38 × 5.57 = ₹85.69

Thus, you would be willing to pay up to ₹85.69.

(b)

Particulars	S	T	U	V
Risk Free Return [R_F]	7%	7%	7%	7%
Fund Invested	Money multiplier Fund	Balanced Growth Fund	Safe money Fund	Market Portfolio
Beta of the Portfolio [β_P]	1.80	1.25	0.60	1.00
Return on Portfolio [R_P]	23.50%	16.50%	12.50%	16.00%
Treynor Measure [$(R_P-R_F) \div \beta_P$]	9.17 [23.50–7] ÷1.80	7.60 [16.50–7] ÷ 1.25	9.17 [12.50–7] ÷ 0.60	9.00 [16–7] ÷ 1
Ranking	**1**	**3**	**1**	**2**

Evaluation: Both S and U have earned the same Reward per unit of risk taken, which is more than the Market Reward to Risk of 9.00.

5. (a) Tea Ltd., has been enjoying a substantial net cash inflow, and until the surplus funds are needed to meet tax and dividend payments, and to finance further capital expenditure in several months' time, they have been invested in a small portfolio of short-term equity investments.

Details of the portfolio, which consists of shares in four UK listed companies, are as follows.

Company	Number of shares held	Beta equity coefficient	Market price per share (₹)	Latest Dividend yield (%)	Expected return on equity in the next year %
A Ltd.	**60,000**	**1.20**	**4.29**	**6.10**	**19.50**
B Ltd.	**80,000**	**2.30**	**2.92**	**3.40**	**24.00**
C Ltd.	**1,00,000**	**0.85**	**2.17**	**5.70**	**17.50**
D Ltd.	**1,25,000**	**1.28**	**3.14**	**3.30**	**23.00**

The current market return is 19% a year and the Risk free rate is 11% a year.

Required:

1. **On the basis of the data given, calculate the risk of Tea Ltd.'s short term investment portfolio relative to that of the market.**
2. **Recommend, with reasons, whether Tea Ltd., should change the composition of its portfolio.**

[7]

(b) An investor is considering two investment opportunities with the following risk and return characteristics.

Project	P	Q
Expected return	**15%**	**22%**
Risk	**3%**	**7%**

The investor plans to invest 80% of its available funds in share P and 20% in Q. The directors believe that the correlation co-efficient between the returns of the shares is +1.0.

Required—

(1) Calculate the returns from the proposed portfolio of shares P and Q.

(2) Calculate the risk of the portfolio;

(3) Suppose the correlation coefficient between P and Q is -1, then analyse how should the company invest its funds in order to obtain a zero risk portfolio.

[7]

Answer:

(a) 1. Computation of Weighted Beta

Security	No. of shares held	MPS (₹)	Market value of investments	Proportion	Beta	Portfolio Beta
(1)	(2)	(3)	(4)	(5)	(6)	(7)= (5)× (6)
A	60,000	4.29	2,57,400	2,57,400 ÷ 11,00,500 = 0.2339	1.20	0.28068
B	80,000	2.92	2,33,600	2,33,600 ÷ 11,00,500 = 0.2123	2.30	0.48829
C	1,00,000	2.17	2,17,000	2,17,000 ÷ 11,00,500 = 0.1972	0.85	0.16762
D	1,25,000	3.14	3,92,500	3,92,500 ÷ 11,00,500 = 0.3567	1.28	0.45658
			11,00,500	**1**	**5.63**	**1.393166**

2. Comparison with Return under CAPM and Recommended changes in Composition

Security	Valuation under CAPM = $R_F + [\beta \times (R_M - R_F)]$	Expected K_e in the next year %	Evaluation	Strategy
A	11% + 1.20 (19% - 11%) = 20.60	19.50	Overpriced	Sell
B	11% + 2.30 (19% - 11%) = 29.40	24.00	Overpriced	Sell
C	11% + 0.85 (19% - 11%) = 17.80	17.50	Overpriced	Sell
D	11% + 1.28 (19% - 11%) = 21.24	23.00	Under priced	Buy

(b) (1) Return of the Portfolio

Securities (1)	Expected return (2)	Proportion (3)	Return from portfolio (4) = (2) ×(3)
P	15	0.8	12
Q	22	0.2	4.4
Return of the Portfolio			16.4

(2) Basic Values of Factors for Determination of Portfolio Risk

Particulars	Notation	Value
Standard deviation of Security P	σ_P	3%
Standard deviation of Security Q	σ_Q	7%
Correlation co-efficient of Securities P and Q	ρ_{PQ}	+1
Weight of Security P	W_P	0.80
Weight of Security Q	W_Q	0.20

Risk of Portfolio i.e., Standard deviation of Portfolio of P and Q [80%: 20% Ratio]

$$\sigma_{PQ} = \sqrt{(\sigma_P^2 \times W_P^2) + (\sigma_Q^2 \times W_Q^2) + 2(\sigma_P \times W_P \times \sigma_Q \times W_Q \times \rho_{PQ})}$$
$$= \sqrt{(3^2 \times 0.80^2) + (7^2 \times 0.20^2) + (2 \times 3 \times 0.80 \times 7 \times 0.20 \times 1)}$$
$$= \sqrt{(9 \times 0.64) + (49 \times 0.04) + (6.72)}$$

$$\text{Risk} = \sqrt{5.76 + 1.96 + 6.72}$$
$$= \sqrt{14.44}$$
$$= 3.8\%$$

(3) Computation of Investment in Security P and Q

Proportion of Investment in Security P, $W_P = \dfrac{\sigma_Q^2 - COV_{PQ}}{\sigma_P^2 + \sigma_Q^2 - COV_{PQ}}$

Proportion of Investment in Security Q, $W_Q = 1 - W_P$

$Cov_{PQ} = \rho_{PQ} \times \sigma_P \times \sigma_Q$
$= -1 \times 3 \times 7 = -21$

$W_P = [\sigma_Q^2 - Cov_{PQ}] \div [\sigma_P^2 + \sigma_Q^2 - 2Cov_{PQ}]$
$\rightarrow W_P = [7^2 - (-21)] \div [3^2 + 7^2 - 2 \times (-21)]$
$\rightarrow W_P = [49 + 21] \div [9 + 49 + 42]$
$\rightarrow W_P = 70 / 100$
$= 0.70$

Proportion of Investment in Security Q, $W_Q = 1 - W_P = 1 - 0.70 = 0.30$

6. (a) Tripti has two investment opportunities, M and N, carrying an yield of 15% p.a. the tenor of both these investments is 3 years.
M offers continuous compounding facility, whereas N offers yield on the basis of monthly compounding. Advise which offer will Tripti opt for.
If continuous compounding facility comes at a price of ₹180 p.a. per lakh of deposit (chargeable at the end of the period), examine the position.
Recommend at what price, will Tripti be indifferent to Continuous Compounding Facility and Monthly Compounding. [7]

(b) DY has purchased ₹400 million cap (i.e., call options on interest rates) of 9% at a premium of 0.65% of face value. ₹400 million floor (i.e., put options on interest rates) of 4% is also available at premium of 0.69% of face value.
Calculate the following:
(a) If interest rates rise to 10%, what is the amount received by DY? What are the net savings after deducting the premium?
(b) If DY also purchases a floor, what are the net savings if interest rates rise to 11%? What are

the net savings if interest rates fall to 3%?

(c) If, instead, DY sells (writes) the floor, what are the net savings if interest rates rise to 11%? What if they fall to 3%?

(d) What amount of floors should it sell in order to compensate for its purchases of caps, given the above premium? [7]

Answer:

(a) I. Return on Investment

Particulars	Investment M	Investment N
Investment (assumed)	₹20,00,000	₹20,00,000
Amount receivable on Maturity (A)	$A = P \times e^{r \times t}$ $= ₹20,00,000 \times e^{0.15 \times 3}$ $= ₹20,00,000 \times e^{0.45}$ $= ₹20,00,000 \times 1.5683$ $= ₹31,36,600$	$A = P \times (1 + r/m)^{n \times m}$ $= ₹20,00,000 \times (1 + 0.15/12)^{3 \times 12}$ $= ₹20,00,000 \times (1 + 0.0125)^{36}$ $= ₹20,00,000 \times (1.0125)^{36}$ $= ₹20, 00,000 \times 1.563944$ $= ₹31,27,888$
Charges payable at ₹180 p.a. per lakh	20 × ₹180 p.a. × 3 years = ₹10,800	Nil
Net Amount Receivable upon Maturity	₹31,36,600 – ₹10,800 = ₹31,25,800	₹31,27,888 – Nil = ₹31,27,888

II. Evaluation of Investments

Case A (No charges for continuous compounding): Investment M is preferable, as it offers a higher return on maturity.

Case B (Charges for Continuous Compounding): Investment N is preferable, as amount receivable is higher than net amount receivable in Investment M.

III. Indifference Point

Tripti will be indifferent to Investment M and N, if

Amount Receivable under Maturity in Investment N = Amount Receivable under Maturity in Investment M Less Charges for Continuous Compounding

- ₹31,27, 888 = ₹31,36,600 Less Charges
- Charges = ₹31,36,600 Less ₹31,27,888 = ₹8,712
- Chagres per Lakh per Annum = ₹8,712 ÷ (3 Years × 20)
  = ₹8,712 ÷ 60
  = ₹145.20

Conclusion: the price payable for Investment M is ₹145.20 per lakh per annum for Tripti to be indifferent to both the investment alternatives.

(b) (A) Premium for purchasing the cap = 0.65% × ₹400 million = ₹26,00,000. If interest rates rise to 10 percent, cap purchasers receive ₹400 million × 0.01 = ₹40,00,000. The net savings is ₹14,00,000.

(B) If DY also purchases the floor: Premium = 0.0069 × ₹400 million = ₹27,60,000, and the total premium = ₹27,60,000 + ₹26,00,000 = ₹53,60,000.
If interest rates rise to 11 percent, cap purchasers receive 0.02 × ₹400 million = ₹80,00,000 and the net savings = ₹80,00,000 – ₹53,60,000 = ₹26,40,000.
If interest rates fall to 3 percent, floor purchaser receive 0.01 × ₹400 million = ₹40,00,000 and the net savings = ₹40,00,000 – ₹53,60,000 = - ₹13,60,000.

(C) If DY sells the floor, it receives net ₹27,60,000 (-) the cost of the cap of ₹26,00,000 = + ₹1,60,000.
If interest rates rise to 11 percent, cap purchasers receive 0.02 × ₹400 million = ₹80,00,000. The net the savings = ₹80,00,000 + ₹1,60,000 = ₹81,60,000.
If interest rates fall to 3 percent, floor purchasers receive 0.01 × ₹400 million = ₹40,00,000. The net savings to DY = - ₹40,00,000 + 1,60,000 = - ₹38,40,000

(D) DY Needs to sell: X × 0.0069 = ₹26,00,000, or X = ₹37,68,11,594 worth of 4 percent floors.

7. (a) Proactive Ltd. imports some specialty instruments from Japan and exports the finished product to US. The company has a payable of ¥ 500 million and a receivable of $10 million three months hence. The following exchange rates are available in the market:

	$/₹	¥/₹
Spot Rate	**46.65/85**	**0.4065/0.4115**
3m forward	**46.90/15**	**0.4218/0.4268**

The current interest rate scenario is as follows:

Maturity	Rupee (%)	Dollar (%)	Yen (%)
3-m	**8.0/9.0**	**6.00/6.50**	**0.4/0.5**

The company is considering to cover the exposures either through the forward market or through the money market.
You are required to advise the company which alternative should be better for covering both the payables and receivables. [7]

(b) The US dollar is selling in India at ₹55.50. If the interest rate for 6 months borrowing in India is 10% per annum and the corresponding rate in USA is 4%.
You are required to:
(i) Examine that US dollar will be at a premium or at discount in the Indian Forex Market.
(ii) Calculate the expected 6-months forward rate for US dollar in India, and
(iii) Calculate the rate of forward premium or discount. [7]

Answer:

(a) Payable of ¥500 million after 3 months:
Covering through forward market:
Rupee outflow = ¥ 500 million × 0.4268 ¥ per₹ = ₹213.40 million
Covering through money market:

Borrow rupee, convert into yen spot and invest for 3 months.

Yen to be invested	= 500/ (1 + 0.004/4)	= ¥499.500 million
Rupee amount to be borrowed	= ¥499.500 million × 0.4115¥ per₹	= ₹205.5443 million
Rupee amount repayable	= ₹205.5443 × (1 + 0.09/4)	= ₹210.1690 million

So, we see outflow through money market is lower than the forward market cover. So, money market cover is preferable.

Receivable of $10 million after 3 months:

Covering through forward market:

Rupee inflow = $10 million × ₹46.90 per $ = ₹469 million

Covering through money market:

Borrow $, convert into rupee spot and invest for 3 months.

$ amount to be borrowed	= 10/ (1 + 0.08/4)	= $9.80 million
Rupee inflow at spot	= $9.80 million × ₹46.65 per $	= ₹457.353 million
Rupee inflow after 3 months	= 457.353 (1 + 0.08/4)	= ₹466.300 million

So, forward cover is preferable.

(b) (i) Under the given circumstances, the USD is expected to quote at a premium in India as the interest rate is higher in India.

(ii) Calculation of the forward rate:

$$\frac{1+i_h}{1+i_f} = \frac{e_1}{e_0}$$

Where: i_h is home currency interest rate, i_f is foreign currency interest rate, e_1 is end of the period forward rate, and e_o is the spot rate.

Therefore, $\frac{1+(0.10/2)}{1+(0.04/2)} = \frac{e_1}{55.50}$

$$\frac{1+0.05}{1+0.02} = \frac{e_1}{55.50}$$

Or, $\frac{1.05 \times 55.50}{1.02} = e_1$

Or, $\frac{58.275}{1.02} = e_1$

Or, e_1 = ₹57.13

(iii) Rate of premium: $\frac{(\text{Forward Rate} - \text{Spot Rate})}{\text{Spot Rate}} \times 100 \times \frac{12 \text{ months}}{\text{Period of Quote}}$

$= \frac{57.13 - 55.50}{55.50} \times 100 \times \frac{12}{6}$

$= 5.87\%$

8. Short Notes on:

(a) Discuss the three dimensions of the Digital Finance Cube. **[5]**

(b) Discuss the advantages & Disadvantages of American Depositary Receipts (ADR). **[5]**

(c) Discuss the several problems of Securitization. **[4]**

Answer:

(a) A digital finance cube has three dimensions (I) Digital Finance business functions, (II) Digital Finance Technologies and Technological Concepts, and (III) Digital Finance Institutions. Each dimension is further classified into a number of constituents.

(I) Digital Finance Business Functions:

(i) **Digital Financing:** Digital financing include –

- Invoice financing and invoice factoring i.e., borrowing against or selling its accounts receivables to any third party
- Electronic Invoicing i.e., generating and automated processing of invoices.
- Lease Financing i.e., use of assets that is owned by the finance provider.

(ii) **Digital Investments:** This includes investment advisory services including arrangement of transactions. For example, online brokerage, mobile and social trading in B2C area, high frequency and algorithmic B2B trading.

(iii) **Digital Payments**: This refers to electronic payments through wallets or UPIs.

(II) Digital Finance Technologies and Technological Concepts:

(i) **Social Networks:** This enables the interaction and the development of networks via social media platforms.

(ii) **Near Field Communication:** It is a standardized protocol that enables two devices to communicate when brought close to each other.

(III) Digital Finance Institutions

They include FiinTech companies (both start-ups and established technology driven companies) entering the financial domain and the incumbent traditional service providers.

(i) **FinTech Companies:** They emerge either as FinTech start-ups or technology companies without a history in financial services that have developed FinTech offerings.

(ii) **Traditional Service Providers**: They include AMCs, banks, insurance companies and brokerage companies. These service providers encompass a broad range of services including cash accounts, savings, money management, investment management, payments, financial advice, lending, foreign currency exchange, equity trading, brokerage and pension planning.

(b) American Depositary Receipts (ADR) provide the following advantages & disadvantages-

1. Advantages of ADRs:

(i) Access to Large Capital.

(ii) Access to Foreign Exchange.

(iii) No Change in the Shareholding / voting pattern.

(iv) Increased recognition for the Company internationally by bankers, customers, etc.

(v) No Exchange Rate risk since the Company pays interest and dividends in Indian Rupees.

2. Disadvantages of ADRs:

(i) High cost of Issue.

(ii) Requirement as to large size of issue.

(iii) Stringent compliance requirements.

(c) In spite of its widely recognised benefits, securitization has a few limitations as well.

1. Though theoretically the cost of securitizing assets is expected to be lower than the cost of mainstream funding, actually, securitization has proved to be a costly source, primarily in emerging markets due to the higher premium demanded by the investors and additional cost of rating and legal fees.
2. Setting up of an SPV requires high initial payment. Hence, there is a certain minimum economic size below which securitization is not cost effective.
3. Securitization transfers the problem of asset liability mismatch to investors. The profile of the repayment of principal to investors in a pass-through transaction replicates the payback pattern of the assets.
4. Securitization requires high level of disclosure of information. In addition to the disclosures required by regulators, there are disclosures to services, trustees, rating agencies, and in some circumstances, even to investors.