



J.K. SHAH[®]
TEST SERIES

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SUGGESTED SOLUTION

FINAL MAY 2019 EXAM

SUBJECT - SFM

Test Code - FNJ 7078

BRANCH - () (Date :)

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Answer 1:

(i) Computation of Business Value

		(Rs. Lakhs)
Profit before tax $\frac{77}{1-0.30}$		110
Less: Extraordinary income		(8)
Add: Extraordinary losses		10
		112
Profit from new product	(Rs. Lakhs)	
Sales	70	
Less: Material costs	20	
Labour costs	12	
Fixed costs	<u>10</u>	<u>(42)</u>
		<u>28</u>
		140.00
Less: Taxes @30%		42.00
Future Maintainable Profit after taxes		98.00
Relevant Capitalisation Factor		0.14
Value of Business (Rs.98/0.14)		700

(5 marks)

(ii) Computation of Market Price of Equity Share

Future maintainable profits (After Tax)	Rs. 98,00,000
Less: Preference share dividends 1,00,000 shares of Rs. 100 @ 13%	Rs. 13,00,000
Earnings available for Equity Shareholders	Rs. 85,00,000
No. of Equity Shares	50,00,000
Earning per share = $\frac{\text{Rs.}85,00,000}{50,00,000} =$	Rs. 1.70
PE ratio	10
Market price per share	Rs. 17

(4 marks)

Answer 2:

To determine the centre of investment by bank except New York (in whose currency the surplus is available) Arbitrage Profit for remaining two centres shall be computed as follows:

(a) If investment is made at London

(3 marks)

Convert US\$ 5,00,000 at Spot Rate (5,00,000/1.5390) = £ 3,24,886

Add: £ Interest for 3 months on £ 324,886 @ 5% = £ 4,061

= £ 3,28,947

Less: Amount Invested \$ 5,00,000

Interest accrued thereon	\$ <u>5,000</u>
	<u>\$ 5,05,000</u>
Equivalent amount of £ required to pay the above sum (\$ 5,05,000/1.5430)	= £ <u>3,27,285</u>
Arbitrage Profit	= £ 1,662

(b) If investment is made at New York (1 marks)

Gain \$ 5,00,000 (8% - 4%) x 3/12	= \$ 5,000
Equivalent amount in £ 3 months (\$ 5,000/ 1.5475)	<u>£ 3,231</u>

(c) If investment is made at Frankfurt (3 marks)

Convert US\$ 500,000 at Spot Rate (Cross Rate) 1.8260/1.5390	= €1.1865
Euro equivalent US\$ 500,000	= €5,93,250
Add: Interest for 3 months @ 3%	= <u>€4,449</u>
	<u>= €5,97,699</u>
3 month Forward Rate of selling €(1/1.8150)	= £ 0.5510
Sell €in Forward Market €5,97,699 x £ 0.5510	= £ 3,29,332
Less: Amounted invested and interest thereon	<u>= £ 3,27,285</u>
Arbitrage Profit	<u>= £ 2,047</u>

Recommendation: Since out of three options the maximum profit is in case investment is made in New York. Hence it shall be opted and arbitrage gain would be £3,231. **(1 mark)**

Answer 3:

(A)

(i) 3 Months Interest rate is 4.50% & 6 Months Interest rate is 5% p.a.

Future Value 6 Months from now is a product of Future Value 3 Months now & 3 Months Future Value from after 3 Months.

$$(1+0.05*6/12) = (1+0.045*3/12) \times (1+i_{3,6} *3/12)$$

$$i_{3,6} = [(1+0.05* 6/12) / (1+0.045 *3/12) - 1] *12/3$$

i.e. 5.44% p.a.

(2 marks)

(ii) To find arbitrage opportunity first we shall find out the 6 Months forward 6 month rate as follows:

$$(1+0.065) = (1+0.05*6/12) \times (1+i_{6,6} *6/12)$$

$$i_{6,6} = [(1+0.065/1.025) - 1] *12/6$$

6 Months forward 6 month rate is 7.80% p.a.

The Bank is quoting 6/12 USD FRA at 6.50 – 6.75%

Therefore, there is an arbitrage Opportunity of earning interest @ 7.80% p.a. & Paying

@ 6.75%.

(2 marks)

Strategy: Borrow for 6 months, buy an FRA & invest for 12 months

To get \$ 1.065 at the end of 12 months for \$ 1 invested today

To pay\$ 1.060# at the end of 12 months for every \$ 1 Borrowed today

Net gain \$ 0.005 i.e. risk less profit for every \$ borrowed

$$\# (1+0.05/2) (1+.0675/2) = (1.05959) \text{ say } 1.060.$$

(2 marks)

(B)

If the current price is taken as Rs. 380 the computations are as follows:

$$d_1 = \frac{I_n \left(\frac{380}{400} \right) + \left[.05 + \frac{1}{2} (.22)^2 \right] .25}{.22\sqrt{.25}} = \frac{-0.05129 + .01855}{.11} = -0.297636$$

$$d_2 = \frac{I_n \left(\frac{380}{400} \right) + \left[.05 - \frac{1}{2} (.22)^2 \right] .25}{.22\sqrt{.25}} = \frac{-0.05129 + .00645}{.11} = -0.407666$$

$$V_o = V_s N(d_1) - \frac{E}{e^n} N(d_2)$$

$$N(d_1) = N(-0.297636) = .3830$$

$$N(d_2) = N(-0.407666) = .3418$$

$$380 (.3830) - \frac{400}{e^{(.05)(.25)}} \times (.3418)$$

$$145.54 - \frac{400}{1.012578} (.3418) = 145.54 - 135.02 = 10.52$$

(4 marks)

Answer 4:**(A)**

Instead of selling the stock of Reliance Ltd., Ram must cover his Risk by buying or long position in Put Option with appropriate strike price. Since Ram's risk appetite is 5%, the most suitable strike price in Put Option shall be Rs. 950 (Rs. 1000 – 5% of Rs. 1000). If Ram does so, the overall position will be as follows:

Spot Price after 1 month	Stock Value	Put Payoff	Initial Cash Flow	Total
$S < 950$	S	$950 - S$	-8	$942 - S$
$S > 950$	S	-	-8	$S - 8$

Thus, from the above, it can be seen that the value of holding of Ram shall never be less than Rs. 942 as Put Option will compensate for loss below spot price of Rs. 950. However, this strategy will involve a cost of Rs. 8.

Alternative View:

Since Ram is investing Rs. 1000 and he can afford loss of maximum Rs.50 (Rs.1000 x 5%), He can also buy a put with exercise price of Rs.970 and pay the premium of Rs.20.

So in this case if spot price goes down below Rs.970 on exercise date, Ram can sale the share @ 970. So his loss on share will be (buy @1000 and sell @970) Rs.30 and he has paid put premium of Rs.20.

Therefore, total outflow of Mr. Ram will be = Rs.30 + Rs.20 = Rs.50.

(5 marks)**(B)**

Here Canara Bank shall buy US\$ and credit ` to Vostro account of ABN-Amro Bank. Canara Bank's buying rate will be based on the Inter-bank Buying Rate (as this is the rate at which Canara Bank can sell US\$ in the Interbank market)

Accordingly, the Interbank Buying Rate of US\$ will be ` 51.3625 (lower of two) Equivalent of US\$ for ` 15 million at this rate will be = $(15,000,000 / 51.3625) = \text{US\$ } 2,92,041.86$.

(4 marks)**(C)**

Strategy 1: This strategy is covered by High Risk: Low Reward category and worst as it leaves all exposures unhedged. Although this strategy does not involve any time and effort, it carries high risk.

Strategy 2: This strategy covers Low Risk: Reasonable reward category as the exposure is covered wherever there is anticipated profit otherwise it is left.

Strategy 3: This strategy is covered by High Risk: High Reward category as to earn profit, cancellations and extensions are carried out. Although this strategy leads to high gains but it is also accompanied by high risk.

Strategy 4: This strategy is covered by Low Risk : Low Reward category as company plays a very safe game.

Diagrammatically all these strategies can be depicted as follows:



(1 mark * 4 = 4 marks)

Answer 5:

- (i) By entering into an FRA, firm shall effectively lock in interest rate for a specified future in the given it is 6 months. Since, the period of 6 months is starting in 3 months, the firm shall opt for 3 × 9 FRA locking borrowing rate at 5.94%.

In the given scenarios, the net outcome shall be as follows: **(3 marks)**

	If the rate turns out to be 4.50%	If the rate turns out to be 6.50%
FRA Rate	5.94%	5.94%
Actual Interest Rate	4.50%	6.50%
Loss/ (Gain)	1.44%	(0.56%)
FRA Payment / (Receipts)	€50 m × 1.44% × ½ = €60,000	€50m × 0.56% × ½ = (€40,000)
Interest after 6 months on €50 Million at actual rates	= €50m × 4.5% × ½ = €1,125,000	= €50m × 6.5% × ½ = €1,625,000
Net Out Flow	€1,485,000	€1,485,000

Thus, by entering into FRA, the firm has committed itself to a rate of 5.94% shown as follows:

$$\frac{€1,485,000}{€50,000,000} \times 100 \times \frac{12}{6} = 5.94\% \quad \text{(1 mark)}$$

- (ii) Since firm is a borrower it will like to off-set interest cost by profit on Future Contract. Accordingly, if interest rate rises it will gain hence it should sell interest rate futures.

$$\begin{aligned} \text{No. of Contracts} &= \frac{\text{Amount of Borrowing}}{\text{Contract Size}} \times \frac{\text{Duration of Loan}}{3 \text{ months}} \\ &= \frac{€50,000,000}{€50,000} \times \frac{6}{3} = 2000 \text{ Contracts} \end{aligned} \quad \text{(1 mark)}$$

The final outcome in the given two scenarios shall be as follows:

	If the interest rate turns out to be 4.5%	If the interest rate turns out to be 6.5%
Future Course Action:		
Sell to open	94.15	94.15

Buy to close	95.50 (100 - 4.5)	93.50 (100 - 6.5)
Loss/ (Gain)	1.35%	(0.65%)
Cash Payment (Receipt) for	€50,000×2000×	€50,000×2000×0.65%
Future Settlement	1.35%×3/12	× 3/12
	= €37,500	= (€162,500)
Interest for 6 months on €50 million at actual rates	€50 million × 4.5% × ½	€50 million × 6.5% × ½
	= €1,25,000	= €16,25,000
	€1,462,500	€1,462,500

(4 marks)

Thus, the firm locked itself in interest rate of 5.85% shown as follows:

$$\frac{€1,462,500}{€50,000,000} \times 100 \times \frac{12}{6} = 5.85\%$$

(1 mark)