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**SUGGESTED SOLUTION**

**CA FINAL MAY 2017 EXAM**

**STRATEGIC FINANCIAL MANAGEMENT**

**Test Code - F M J 4 0 1 4**

**BRANCH - (MULTIPLE) (Date :                     )**

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**Answer-1 (a) :**

Security	No. of shares (1)	Market Price of Per Share (2)	(1) × (2)	% to total (w)	β (x)	wx
VSL	10000	50	500000	0.4167	0.9	0.375
CSL	5000	20	100000	0.0833	1	0.083
SML	8000	25	200000	0.1667	1.5	0.250
APL	2000	200	400000	0.3333	1.2	0.400
			1200000	1		1.108

Portfolio beta 1.108 **(3 Marks)**

(i) Required Beta 0.8

It should become (0.8 / 1.108) 72.2 % of present portfolio

If Rs. 12,00,000 is 72.20%, the total portfolio should be

Rs. 12,00,000 × 100/72.20 or Rs. 16,62,050

Additional investment in zero risk should be (Rs. 16,62,050 – Rs. 12,00,000) = Rs. 4,62,050

**Revised Portfolio will be**

Security	No. of shares (1)	Market Price of Per Share (2)	(1) × (2)	% to total (w)	β (x)	wx
VSL	10000	50	500000	0.3008	0.9	0.271
CSL	5000	20	100000	0.0602	1	0.060
SML	8000	25	200000	0.1203	1.5	0.180
APL	2000	200	400000	0.2407	1.2	0.289
Risk free asset	46205	10	462050	0.2780	0	0
			1662050	1		0.800

**(3 Marks)**

(ii) To increase Beta to 1.2

Required beta 1.2

It should become 1.2 / 1.108

108.30% of present beta

If 1200000 is 108.30%, the total portfolio should be

1200000 × 100/108.30 or

1108033 say 1108030

Additional investment should be (-) 91967 i.e. Divest Rs. 91970 of Risk Free Asset

**Revised Portfolio will be**

Security	No. of shares (1)	Market Price of Per Share (2)	(1) × (2)	% to total (w)	β (x)	wx
VSL	10000	50	500000	0.4513	0.9	0.406
CSL	5000	20	100000	0.0903	1	0.090
SML	8000	25	200000	0.1805	1.5	0.271
APL	2000	200	400000	0.3610	1.2	0.433
Risk free asset	-9197	10	-91970	-0.0830	0	0
			1108030	1		1.20

Portfolio beta 1.20 **(2 Marks)**

**Answer-1 (b) :****Working notes:**

(i) 2000m Rubbits = 2000m/85.40 = £ 23.4192m

Bank charges = 23.4192m X .0025 = £ 0.0585m p.a.

	Period	Cash flow in £
	0	- £23.4192 m
Bank charges	1-3	- 0.0585 p.a.
Annual fees	1	+ 40m/93.94 = + 0.4258m
Annual fees	2	+ 40m/103.334 = + 0.3871m
Annual fees	3	+ 40m/113.67 = + 0.3519m
Contractual payments (swap)	3	+ 23.4192m
Contractual payment (others)	3	+ 2000m/113.67 = + 17.5948m

**(4 Marks)**

DCF Analysis of the project (£ million)

	Period	PVF	CF	PV
Swap payment	0	1	-23.4192	-23.4192
Bank charges	1-3	2.283	-0.0585 p.a.	-0.1336
Annual fees	1	0.870	+ 0.4258	0.3704
Annual fees	2	0.756	+ 0.3871	0.2926
Annual fees	3	0.658	+ 0.3519	0.2316
Contract receipt (swap)	3	0.658	+ 23.4192	15.4098
Contract receipt (other)	3	0.658	+ 17.5948	11.5773
NPV				+ 4.3289

(4 Marks)

**Answer-2 (a) :**

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

(1 Mark)

(ii) Calculation of the forward rate:

$$\frac{1+R_h}{1+R_f} = \frac{F_1}{E_0}$$

Where:  $R_h$  is home currency interest rate,  $R_f$  is foreign currency interest rate,  $F_1$  is end of the period forward rate, and  $E_0$  is the spot rate.

$$\text{Therefore } \frac{1 + (0.10/2)}{1 + (0.04/2)} = \frac{F_1}{55.50}$$

$$\frac{1 + 0.05}{1 + 0.02} = \frac{F_1}{55.50}$$

$$\text{or } \frac{1.05}{1.02} \times 55.50 = F_1$$

$$\text{or } \frac{58.275}{1.02} = F_1$$

$$\text{or } F_1 = ₹57.13$$

(3 Marks)

(iii) Rate of premium:

$$\frac{57.13 - 55.50}{55.50} \times \frac{12}{6} \times 100 = 5.87\%$$

(2 Marks)

**Answer-2 (b) :**

(i) US \$ required to get Rs. 25 lakhs after 2 months at the Rate of Rs. 47/\$

$$\therefore \frac{\text{Rs.}25,00,000}{\text{Rs.}47} = \text{US } \$ 53191.489$$

(ii) Rs. required to get US\$ 2,00,000 now at the rate of Rs. 46.25/\$

$$\therefore \text{US } \$ 200,000 \times \text{Rs. } 46.25 = \text{Rs. } 92,50,000$$

(iii) Encashing US \$ 69000 Now Vs 2 month later

$$\text{Proceed if we can encash in open mkt } \$ 69000 \times \text{Rs.}46 = \text{Rs. } 31,74,000$$

Opportunity gain

$$= 31,74,000 \times \frac{10}{100} \times \frac{2}{12} \quad \text{Rs.}52,900$$

$$\text{Likely sum at end of 2 months} \quad \underline{\underline{32,26,900}}$$

Proceeds if we can encash by forward rate :

$$\$ 69000 \times \text{Rs.}47.00 \quad 32,43,000$$

It is better to encash the proceeds after 2 months and get opportunity gain.

(3 x 2 = 6 Marks)

**Answer-3 (a) :**

We are given all the items of PCPT. Hence, we can find whether arbitrage opportunity is there or not by comparing the LHS of PCPT with its RHS

$$\text{LHS} = \text{Spot price} + \text{put premium} = 144 + 4.50 = \text{Rs. } 148.50 \quad (1 \text{ Mark})$$

$$\begin{aligned} \text{RHS} &= \text{call premium} + \text{PV of strike price} = 0.70 + 148.e^{-0.01} \\ &= 147.23 \quad (1 \text{ Mark}) \end{aligned}$$

RHS is less<sup>1</sup> than LHS. Purchase call. Sell put. (1 Mark)

By selling the put, the operator is taking risk of loss in case of fall in price. To protect against risk on account of fall in prices, one should resort to short selling i.e. borrow the share, sell the share, invest the sale proceeds, on maturity buy the share and return the share to its lender.

	Rs
Purchase call	-0.70
Sell put	+ 4.50
Borrow one share and sell the same one	+ 144
Net Cash generated	147.80

(2 Marks)

Invest Rs. 147.80. Investment proceeds =  $147.80.e^{0.01} = 149.29$

(1 Mark)

If spot price on maturity is equal to strike price

[Neither option will be exercised]

$$\begin{aligned} \text{Profit} &= \text{Investment proceeds} - \text{cost of purchasing one share on spot} \\ &= 149.29 - 148 = 1.29 \quad (1 \text{ Mark}) \end{aligned}$$

Return the share to its lender.

If spot price on maturity is greater than strike price, say 149

[Put will not be exercised, call will be exercised, purchase the share (Required for returning to the lender of share on spot basis)].

$$\begin{aligned} \text{Profit} &= \text{Investment proceeds} + \text{receipt under call} - \text{cost of purchasing one share on spot basis} \\ &= + 149.29 + 1 - 149 = 1.29 \quad (1 \text{ Mark}) \end{aligned}$$

Return the share to its lender.

If spot price on maturity is less than strike price, say 147

[Call will not be exercised, put will be exercised, purchase 1 share on spot basis]

Return the share to its lender. (1 Mark)

$$\begin{aligned} \text{Profit} &= \text{Investment proceeds} - \text{cost of purchasing one share on spot basis} - \text{payment to put buyer} \\ &= + 149.29 - 147 - 1 = 1.29 \quad (1 \text{ Mark}) \end{aligned}$$

For borrowing the share, we have to pay some commission to the share lender. If its amount is less than Rs. 1.29, the arbitrage opportunity is there. Otherwise it is not there.

**Answer-3 (b) :**

Return for the year (all changes on a per year basis)

Particulars	Rs. /Unit
Change in price (Rs. 13.00 – Rs. 12.25)	0.75
Dividend received	1.25
Capital gain distribution	<u>1.00</u>
Total Return	<u>3.00</u>

(2 Marks)

$$\text{Return on investment} = \frac{3.00}{12.25} \times 100 = 24.49\%$$

If all dividends and capital gain are reinvested into additional units at Rs. 12.50 per unit the position would be.

$$\text{Total amount reinvested} = \text{Rs. } 2.25 \times 300 = \text{Rs. } 675$$

$$\text{Additional units added} = \frac{\text{Rs. } 675}{12.50} = 54 \text{ units}$$

(2 Marks)

Value of 354 units as on 31-12-2010 = Rs. 4,602

Price paid for 300 units on 31-12-2009 (300 × Rs. 12.25) = Rs. 3,675

$$\text{Return} = \frac{\text{Rs.4,602} - \text{Rs.3,675}}{\text{Rs.3,675}} = \frac{\text{Rs.927}}{\text{Rs.3,675}} = 25.22\%$$

(2 Marks)

Answer-3 (c) :

$$\begin{aligned} d_1 &= \frac{\ln(S/E) + (r + \frac{\sigma^2}{2})t}{\sigma\sqrt{t}} \\ &= \frac{\ln(185/170) + (0.07 + \frac{0.18^2}{2})3}{0.18\sqrt{3}} \\ &= \frac{\ln 1.0882 + (0.07 + 0.0162)3}{0.18\sqrt{3}} \\ &= \frac{0.08452 + 0.2586}{0.18\sqrt{3}} \\ &= \frac{0.34312}{0.31177} \end{aligned}$$

$$d_1 = 1.1006$$

$$\begin{aligned} d_2 &= d_1 - \sigma\sqrt{t} \\ &= 1.1006 - 0.31177 = 0.7888 \end{aligned}$$

$$N(d_1) = 0.8770 \text{ (from table)}$$

$$N(d_2) = 0.7848$$

$$\begin{aligned} \text{Value of option} &= V_s N(d_1) - \frac{E}{e^{rt}} N(d_2) = 185 (0.8770) - \frac{170}{e^{0.21}} (0.7848) \\ &= 162.245 - \frac{170}{1.2336} \times 0.7848 \\ &= 162.245 - 108.151 = ₹54.094 \end{aligned}$$

(6 Marks)