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SUGGESTED SOLUTION

CA FINAL NOVEMBER 2016 EXAM

S F M

Test Code - F N J 6 0 2 0

BRANCH - (MUMBAI) (Date : 18.09.2016)

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Answer-1 (a) :

(i) DEF Bank will fix interest rate for 2V3 FRA after 2 years as follows :

XYZ Ltd.

$(1+r)\ (1+0.0420)^2 = (1+0.0448)^3$

$(1+r)\ (1.0420)^2 = (1.0448)^3$

$r = 5.04\%$

Bank will quote 5.04% for a 2V3 FRA.

ABC Ltd.

$(1+r)\ (1+0.0548)^2 = (1+0.0578)^3$

$(1+r)\ (1.0548)^2 = (1.0578)^3$

$r = 6.38\%$

Bank will quote 6.38% for a 2V3 FRA.

(3 Marks)

(ii)

		4.50% – Allow to Lapse	5.50% – Exercise
Interest	Rs.100 crores x 4.50%	Rs.4.50 crores	–
	Rs.100 crores x 5.04%	–	Rs.5.04 crores
Premium (Cost of Option)	Rs.100 crores x 0.1%	Rs.0.10 crores	Rs.0.10 crores
		4.60 crores	5.14 crores

(3 Marks)

Answer-1 (b) :

Workings :

Option I (To finance the purchases by availing loan at 18% per annum) :

Cost of Equipment	**Rs.in Lakhs**
3400 lakh yen at Rs.100 = 340 yen	1,000.00
Add : Interest at 18% (on Rs.1000 lakhs) for 6 months	90.00
Total outflow in Rupees	1,090.00

(2 Marks)

Option II (To accept the offer from foreign branch) :

Cost of letter of Credit	**Rs. in lakhs**
At 1% on 3400 lakhs yen at Rs.100 = 340 yen	10.00
Add : Interest	0.90
(A)	10.90
Payment at the end of 180 days :	
Cost	3400.00 lakhs yen
Interest at 2% p.a. [400 x 2/100 x 180/365]	33.53 lakhs yen
	3433.53 lakhs yen
Conversion at RS.100 = 345 yen [3433.53 / 345 x 100] (B)	= Rs.995.23 lakhs
Total Cost : (A) + (B)	= 1006.13 lakhs

(4 Marks)

Advise : Option 2 is cheaper by (1090.00 – 1006.13) lakh or 83.87 lakh. Hence, the offer may be accepted.

Answer-2 (a) :

(i) The contract is to be cancelled on 31.10.2014 at the spot selling rate of US$ 1

	Rs.61.5200
Add : Margin Money 0.20%	Rs. 0.1230
	Rs.61.6430 or Rs.61.64
US$ 20,000 @ Rs.61.64	= Rs.12,32,800

	US$ 20,000 @ Rs.62.32	Rs.12,46,400
	The difference in favour of the Customer	= Rs.13,600
		(2 Marks)
(ii)	The Rate of New Forward Contract	
	Spot Selling Rate US$ 1	= Rs.61.5000
	Less : Discount @ 0.93%	Rs.0.5720
		Rs.60.9280
	Less ; Margin Money 0.45%	Rs.0.2742
		Rs.60.6538 or Rs.60.65
		(2 Marks)

Answer-2 (b) :

	Amount in Rs.lakhs	**Amount in Rs.lakhs**	**Amount in Rs.lakhs**
Opening Bank (200 – 185 – 12)	3.00		
Add : Proceeds from sale of securities	63.00		
Add : Dividend received	2.00	68.00	
Deduct :			
Cost of securities purchased	56.00		
Fund management expenses paid (90% of 8)	7.20		
Capital gains distributed = 80% of (63-60)	2.40		
			(3 Marks)
Dividend distributed = 80% of 2.00	1.60	67.20	
Closing Bank			0.80
Closing market value of portfolio			198.00
			198.80
Less : Arrears of expenses			0.80
Closing Net Assets			198.00
Number of units (Lakhs)			20
Closing NAV per unit (198.00/20)			9.90
			(3 Marks)

Rate of Earning (Per Unit)

	Amount
Income received (Rs.2.40 lakhs + Rs.1.60 lakhs) / 20 lakhs	Rs.0.20
Loss : Loss on disposal (Rs.10 – Rs.9.90)	Rs.0.10
Net earning	Rs.0.10
Initial Investment	Rs.10.00
Rate of earning (monthly)	1%
Rate of earning (Annual)	12%
	(2 Marks)

Answer-3 (a) :

Applying the Black Scholes Formula,
Value of the Call option now:
The Formula $C = SN(d_1) - K_e^{(-rt)} N(d_2)$

$$d_1 = \frac{\ln (S/K)+(r+\sigma^2/2)t}{\sigma\sqrt{t}}$$

$$d_2 = d_1 - \sigma\sqrt{t}$$

Where,
C = Theoretical call premium
S = Current stock price
t = time until option expiration
K = option striking price
r = risk-free interest rate
N = Cumulative standard normal distribution
e = exponential term
σ = Standard deviation of continuously compounded annual return.
In = natural logarithim

$$d_1 = \frac{\ln(1.0667)+(12\%+0.08)0.5}{0.40\sqrt{0.5}}$$

$$= \frac{0.0646+(0.2)0.5}{0.40x0.7071}$$

$$= \frac{0.1646}{0.2828}$$

= 0.5820

(1 Mark)

$d_2 = 0.5820 - 0.2828 = 0.2992$

(1 Mark)

$N(d_1) = N(0.5820)$
$N(d_2) = N(0.2992)$
Price = $SN(d_1) - K_e^{(-rt)} N(d_2)$
$= 80 \times N(d_1) - (75/1.062) \times N(d_2)$
Value of option

$$= 80\ N(d_1) - \frac{75}{1.062} \times N(d_2)$$

$N(d_1) = N(0.5820) = 0.7197$
$N(d_2) = N(0.2992) = 0.6176$

$$\text{Price} = 80 \times 0.7197 - \frac{75}{1.062} \times 0.6176$$

$= 57.57 - 70.62 \times 0.6176$
$= 57.57 - 43.61$
= Rs.13.96

(4 Marks)

Teaching Notes:
Students may please note following important point:
Values of N(d1) and N(d2) have been computed by interpolating the values of areas underrespective numbers of SD from Mean (Z) given in the question.
It may also be possible that in question paper areas under Z may be mentioned otherwise e.g.Cumulative Area or Area under Two tails. In such situation the areas of the respective Zsgiven in the question will be as follows:
Cumulative Area

Number of S.D. from Mean, (z)	Cumulative Area
0.25	0.5987
0.30	0.6179
0.55	0.7088
0.60	0.7257

Two tail area

Number of S.D. from Mean, (z)	Area of the left and right (two tail)
0.25	0.8026
0.30	0.7642
0.55	0.5823
0.60	0.5485

Answer-3 (b) :

No. of the Future Contract to be obtained to get a complete hedge

$$= \frac{1000 \text{ x Rs.22 x } 1.5 - 5000 \text{ x Rs.40 x } 2}{\text{Rs.1000}}$$

$$= \frac{\text{Rs.3,30,000 - Rs.4,00,000}}{\textit{Rs.}1{,}000} = 70 \text{ contracts}$$

(1 Mark)

Thus, by purchasing 70 Nifty future contracts to be long to obtain a complete hedge.

Cash Outlay

= 10000 x Rs. 22 – 5000 x Rs. 40 + 70 x Rs. 1,000

= Rs. 2,20,000 – Rs. 2,00,000 + Rs. 70,000 = Rs. 90,000

(1 Mark)

Cash Inflow at Close Out

= 10000 x Rs. 22 x 0.98 – 5000 x Rs. 40 x 1.03 + 70 x Rs. 1,000 x 0.985

= Rs. 2,15,600 – Rs. 2,06,000 + Rs. 68,950 = Rs. 78,550

(1 Mark)

Gain/ Loss

= Rs. 78,550 – Rs. 90,000 = - Rs. 11,450 (Loss)

(1 Mark)

Answer-4 (a) :

Cost of Call and Put Options

= (Rs. 2 per share) x (100 share call) + (Rs. 1 per share) x (100 share put)

= Rs. 2 x 100 + 1 x 100

= Rs. 300

(2 Marks)

(i) Price increases to Rs.43. Since the market price is higher than the strike price of the call, the investor will exercise it.

Ending position =(- Rs. 300 cost of 2 option)+(Rs. 1 per share gain on call) x 100

= - Rs. 300 + 100

Net Loss = - Rs. 200

(2 Marks)

(ii) The price of the stock falls to Rs.36. Since the market price is lower than the strike price,the investor may not exercise the call option.

Ending Position: = (- Rs.300 cost of 2 options) + (Rs.4 per stock gain on put) x 100

= - Rs.300 + 400

Gain = Rs.100

(2 Marks)

Answer-4 (b) :

(1 + 0.12) (1 + Risk Premium) = (1 + 0.14)

Or, 1 + Risk Premium = 1.14/1.12 = 1.0179

Therefore, Risk adjusted dollar rate is = 1.0179 x 1.08 = 1.099 – 1 = 0.099

(2 Marks)

Calculation of NPV

Year	Cash flow (Million) US$	PV Factor at 9.9%	P.V.
1	2.00	0.910	1.820
2	2.50	0.828	2.070
3	3.00	0.753	2.259
4	4.00	0.686	2.744
5	5.00	0.624	3.120
			12.013
		Less: Investment	11.000
		NPV	1.013

(2 Marks)

Therefore, Rupee NPV of the project is = Rs. (48 x 1.013) Million
= Rs.48.624 Million

(1 Mark)

Answer-4 (c) :

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

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

(1 Mark)

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

∴ US $ 200,000 × Rs. 46.25 = Rs. 92,50,000

(1 Mark)

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

Proceed if we can encash in open mkt $ 69000 × Rs.46 = Rs. 31,74,000

Opportunity gain

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

Likely sum at end of 2 months 32,26,900

Proceeds if we can encash by forward rate :

$ 69000 × Rs.47.00 32,43,000

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

(3 Marks)