SUGGESTED SOLUTION

CA FINAL NOVEMBER 2016 EXAM

S F M

Test Code - F N J 6 0 1 9

BRANCH - (MUMBAI) (Date :18.09.2016)

Answer-1 (a) :

No. of shares = $\dfrac{\text{Rs.1,300 crores}}{\text{Rs.40 crores}}$ = 32.5 Crores

(1 Mark)

EPS = $\dfrac{\text{PAT}}{\text{No. of shares}}$

EPS = $\dfrac{\text{Rs.290 crores}}{32.5 \text{ crores}} = Rs.8.923$

(1 Mark)

FCFE = Net income − [(1-b) (capex − dep) + (1-b) (Δ WC)]

FCFE = 8.923 − [(1-0.27) (47-39) + (1-0.27) (3.45)]

= 8.923 - {5.84 + 2.5185] = 0.5645

Cost of Equity = Rf + β (R$_m$ − R$_f$)

= 8.7 + 0.1 (10.3 − 8.7) = 8.86%

(1 Mark)

PV of FCFE for 5 years

Year	FCFE (Rs.)	PVF @ 8.86%	PV (Rs.)
1	0.6096	0.9186	0.5600
2	0.6584	0.8438	0.5556
3	0.7111	0.7752	0.5512
4	0.7680	0.7121	0.5469
5	0.8294	0.6541	0.5425
			2.7562

(2 Marks)

$P_5 = \dfrac{\text{FCFE (1+g)}}{K_e - g} = \dfrac{0.8294(1.05)}{0.0886 - 0.05} = \dfrac{0.8709}{0.0386} = Rs.22.56$

(0.5 Marks)

PV of $P_5 = \dfrac{22.56}{(1.0886)^5}$ = Rs.22.56 crore x 0.6541 = Rs.14.76

(0.5 Marks)

∴ Value of Share = Rs.2.7562 + Rs.14.76 = Rs.17.52

Answer-1 (b) :

(a)   Expected dividend for next 3 years.
       Year 1 (D$_1$)   Rs.12.50 (1.08) = Rs.13.50
       Year 2 (D$_2$)   Rs.12.50 (1.08)^2 = Rs.14.58
       Year 3 (D$_3$)   Rs.12.50 (1.08)^3 = Rs.15.75

(1 Mark)

       Required rate of return = 12% (Ke)
       Market price of share after 3 years = (P$_1$) = Rs.400
       The present value of share

$$P_0 = \dfrac{D_1}{(1+ke)} + \dfrac{D_2}{(1+ke)^2} + \dfrac{D_3}{(1+ke)^3} + \dfrac{P_1}{(1+ke)^3}$$

$$P_0 = \dfrac{13.50}{(1+0.12)} + \dfrac{14.58}{(1+0.12)^2} + \dfrac{15.75}{(1+0.12)^3} + \dfrac{400}{(1+0.12)^3}$$

       P$_0$ = 13.50 (0.893) + 14.58 (0.797) + 15.75 (0.712) + 40 (0.712)
       P$_0$ = 12.06 + 11.62 + 11.21 + 284.80
       P$_0$ = Rs.319.69

(2 Marks)

(b)   If growth rate 8% is achieved for indefinite period, then maximum price of share should Mr. A willing
       to pay

$$P_0 = \frac{D_1}{(ke-g)} = \frac{Rs.13.50}{0.12-0.08} = \frac{Rs.13.50}{0.04} = Rs.337.50$$ **(1.5 Marks)**

(c) Assuming that conditions mentioned above remains same, the price after (expected) 3 ear will be :

$$P_3 = \frac{D_4}{ke-g} = \frac{D_3(1.08)}{0.12-0.08} = \frac{15.75 \times 1.08}{0.04} = \frac{17.01}{0.04} = Rs.425.25$$ **(1.5 Marks)**

=Answer-2 (a) :

Compute Value of Equity

Simple Ltd.

Rs.in Lacs

	High Growth	Medium Growth	Slow Growth
Debit + Equity	820	550	410
Less : Debt	460	460	460
Equity	360	90	−50

(2 Marks)

Since the Company has limited liability the value of equity cannot be negative therefore the value of equity under slow growth will be taken as zero because of insolvency risk and the value of debt is taken at 410 lacs. The expected value of debt and equity can then be calculated as:

(1 Mark)

Simple Ltd.

(Rs.in Lacs)

	High Growth		Medium Growth		Slow Growth		Expected Value
	Prob.	Value	Prob.	Value	Prob	Value	
Debt	0.20	460	0.60	460	0.20	410	450
Equity	0.20	360	0.60	90	0.20	0	126
		820		550		410	576

(2 Marks)

Dimple Ltd.

	High Growth		Medium Growth		Slow Growth		Expected Value
	Prob.	Value	Prob.	Value	Prob	Value	
Equity	0.20	985	0.60	760	0.20	525	758
Debt	0.20	65	0.60	65	0.20	65	65
		1050		825		590	823

(2 Marks)

Expected Value

Rs. in lacs

Equity		Debt	
Simple Ltd.	126	Simple Ltd.	450
Dimple Ltd.	758	Dimple Ltd.	65
	884		515

(1 Mark)

Answer-2 (b) :

Working Notes :

Value of C plc = $\dfrac{\text{Residual Cash Flow}}{k_e - g} = \dfrac{4,000,000}{0.1125-0} = £\,35,555,556$

Value of per share of C plc = $\dfrac{35,555,556}{5,000,000} = £\,7.11$

Book Value of per share of C plc = $\dfrac{29,750,000}{5,000,000} = £\,5.95$

Value of M plc = $\dfrac{\text{Residual Cash Flow}}{k_e - g} = \dfrac{6{,}000{,}000}{0.125 - 0} = £\ 48{,}000{,}000$

Value of Combined Entity = $\dfrac{12{,}000{,}000}{0.12 - 0}$ = Rs.100,000,000

Value of Synergy = Value of Combined Entity – Individual Value of M plc and C plc.

(6 x 0.5 = 3 Marks)

Value of Synergy = £ 100,000,000 – (£ 48,000,000 + £ 35,555,556) = £ 16,444,444

(i)   Minimum price per share C plc should accept from M plc is £ 5.95 (current book value).

(ii)   Maximum price per share M plc shall be willing to offer to C plc shall be computed as foliows :

$= \dfrac{\text{Value of C plc as per Residual Cash Flow + Synergy Benefits}}{\text{No. of shares}}$

$= \dfrac{35{,}555{,}556 + 16{,}444{,}444}{5{,}000{,}000} = \dfrac{52{,}000{,}000}{5{,}000{,}000}$ = £ 10.40

(iii)   Floor Value of per share of C plc shall be £ 4 (current market price) and it shall not play any role in decision for the acquisition of C plc as it is lower than its current book value.

(3 x 1 = 3 Marks)

Answer-3 (a) :

First of we shall calculate expected return from share of Company X

(i)   Average annual capital gain (%)

Let g = average annual capital gain, then :

Rs.203.51 $(1 + g)^{1/4}$ = Rs.139

Then g = $(203.51 / 139)^{1/4-}$ – 1 = 0.10 i.e. 10%

(2 Marks)

(ii)   Average annual dividend yield (%)

Year	Dividend / Share Price	Dividend Yield
2010	Rs.7.00/Rs.139	0.050
2011	Rs.8.50/Rs.147	0.058
2012	Rs.9.00/Rs.163	0.055
2013	Rs.9.50/Rs.179	0.053
2014 (Current year)	Rs.10.00/Rs.203.51	0.049
		0.265

(1 Mark)

Average Yield = 0.265/5 = 0.053 i.e. 5.3%

Thus with this data expected return of share of Company X can be given as follows :

E(rx) = Average Annual Capital Gain + Average Annual Dividend

= 10% + 5.3% = 15.3%

(1 Mark)

Then we shall calculate expected return from market index as follows :

(i)   Average annual capital gain (%)

1300 $(1+g)^{1/4}$ = 1768

Then g = $(1768/1300)^{1/4}$ – 1 = 0.08 i.e. 8%

(1 Mark)

(ii)   Average annual dividend yield (%)

3% + 5% + 5.5% + 4.75% + 5.5% = 23.75% / 5 = 4.75%

Thus expected return on Market Index E(r_M) = 8% + 4.75% = 12.75%

Average annual risk-free rate of return (Treasury Bond Return)

7% + 9% + a8% + 8% + 8% = 40% / 5 = 8%

Now with the above information we compute Beta (β) of share company X using CAPM as follows:

$E(rx) = rf + \beta [(E(r_M) - r_f]$

$15.3\% = 8\% + \beta [12.75\% - 8\%)$

$\beta = 1.54$

(3 Marks)

Answer-3 (b) :

Calculation of NPV			('000)	

Year	0		2	3
Inflation factor in India	1.00	1.10	1.21	1.331
Inflation factor in Africa	1.00	1.40	1.96	2.744
Exchange Rate (as per IRP) Cash Flows in ? '000	6.00	7.6364	9.7190	12.3696
Real	-50000	-1500	-2000	-2500
Nominal (1); Cash Flows in African Rand '000	-50000	-1650	-2420	-3327,50
Real	-200000	60000	80000	100000
Nominal	-200000	84000	156800	274400
In Indian Rs. '000 (2)	-33333	11000	16133	22183
Net Cash Flow in Rs. '000 (1)+(2)	-83333	9350	13713	18855.50
PVF@20%	1	0.833	0.694	0.579
PV	-83333	7789	9517	10917

(6 Marks)

NPV of 3 years = -55110 (Rs.'000)

Answer-4 :

(a)   Calculation of Cost of Equity
        Ungeared
        $k_e = R_f + \beta (R_M - R_f)$
        = 6% + 3 (8% - 6%)
        = 6% + 6% = 12%
        Geared
        $B_L = \beta_u [1+(1-T)D/L]$
        = 3(1+0.60x0.30) = 3(1.18)=3.54
        $k_e k = 6\% + 3.54 (8\% -= 6\%) = 13.08\%$ say 13%

(1 Mark)

(b)   Calculation of Annual Instalment and Schedule of Debt Repayment under Loan Option.
        The loan amount is repayable together with the interest at the rate of 10% on loan amount and is
        repayable in equal instalments at the end of each year. The PVAF at the rate of 10% for 4 years is
        3.170, the amount payable will be

        Annual Payment = $\dfrac{5,000,000}{3.170}$ €1,577,287 (rounded)

Schedule of Debt Repayment

End of Year	Total Payment €	Interest €	Principal €	Principal Amount Outstanding €
1	1,577,287	500,000	1,077,287	3,922,713
2	1,577,287	392,271	1,185,016	2,737,697
3	1,577,287	273,770	1,303,517	1,434,180
4	1,577,287	143,107*	1,434,180	–

* Balancing figure

Now evaluation shall be made in three stages :

(i) Whether project is worthwhile or not by computing NPV of the machine using 12% as discounting rate.

Particulars	Year	PVF @ 12%	Cash Flow €	PV €
Initial Outlay	0	1	(5,000,000)	(5,000,000)
Incremental Cash Flow	1	0.893	2,000,000	1,786,000
Incremental Cash Inflow	2	0.797	2,000,000	1,594,000
Incremental Cash Inflow	3	0.712	2,000,000	1,424,000
Incremental Cash Inflow	4	0.636	2,000,000	1,272,000
Salvage Value	4	0.636	500,000	318,000
Total				1,394,000

Since NPV of plant is positive it should be installed.

(ii) Should the plant be leased? The relevant discount rate shall be cost of equity (ungeared) i.e. 12%.

According the PV of cash flow under lease option shall be as follows :

Lease Rent	€2,000,000
Tax Shield	(€800,000)
Outflow	€1,200,000
	x 3.038
	€3,645,600

(iii) Loan Option : When company will go for loan option, company shall become geared one cost of equity for discounting.

Schedule of Cash Outflows : Debt Alternative

(Amount in €)

(1)	(2)	(3)	(4)	(3)+(4)	(5)	(6)	(7)	(8)
End of year	Debt payment	Interest	Dep		Tax Shield [(3) + (4)] 0.40	Cash outflows (2) – (5)	PV F @ 13%	PV
1	1,577,287	500,000	1,250,000	1,750,00	700,000	877,287	0.885	776,398
2	1,577,287	392,271	937,500	1,329,771	531,908	1,045,379	0.783	818,532
3	1,577,287	273,770	703,125	976,895	390,758	1,186,529	0.693	822,265
4	1,577,287	143,107	527,344	670,451	268,180	1,309,17	0.613	802,483
								3,219,678
Less : PV of Salvage Value								(306,500)
								2,913,178

Total present value of Outflows = €2,913,178

Since PV of outflows is lower in the Borrowing option, Bid Town should avail of the loan and purchase the requirement.