

Case: Roger G D'Mello

1) **A)**

2) **A)**

3) **A)**

Amount of loan availed	1,700,000 Rs.	pv
Tenure of loan - 15 years	180 months	nper
Interest rate	7.50% p.a.	
Interest rate - basis monthly reducing	0.6250% p.m.	rate
EMI on loan	15,759 Rs.	pmt
EMIs paid till April, 2011	77	
EMIs outstanding	103 months	
Principal outstanding		

PV of all outstanding EMIs after payment of April 1, 2011 installment =		
Outstanding Principal amount of loan	1,194,240 Rs.	$PV(0.625\%, 103, -15759, 0, 0)$
As the loan is to be repaid on 1st May, 2011, amount will include one month's interest. Hence the amount to pay off the loan	1,201,704 Rs.	$1194240 * (1 + 0.625\%)$

4) **A)**

5) **A)**

Insurance of house on reinstatement basis means that Roger has to be concerned about reconstructing his house in case of damage and go for a suitable amount cover.

Time elapsed since construction	5.4167 years	
Cost of construction when purchased	900,000 Rs.	
Escalation in construction cost	11% p.a.	
Cost of construction now	1,583,952	$900000 * (1 + 11\%)^{5.4167}$

6) **A)**

Current monthly expenses of family	30,000	pmt	
Family expenses excluding self-expenses	27,600		$30000 * (1 - 8\%)$
Present age of Angela	31		
Life expectancy of Angela	80		
Number of years of expenses to cover	49 years		
or	588 months	nper	
Returns from Balanced MF scheme	9% p.a.		
or	0.7207% p.m.		$(1 + 9\%)^{(1/12)} - 1$
Inflation	5.5% p.a.		
or	0.4472% p.m.		$(1 + 5.5\%)^{(1/12)} - 1$
inflation-adjusted rate of return	0.2723% p.m.		$(1 + 0.7207\%) / (1 + 0.4472\%) - 1$
Cover (PV) required today to cover expenses till the expected life of Angela	8,108,561 Rs.		$PV(0.2723\%, 588, -27600, 0, 1)$

Cover already available as Money-back 300,000 Rs.
Therefore, cover required 7,808,561 Rs.

7) A)			
PPF account balance as on 31.03.2010	290,000 Rs.		
Quarterly investment amounts	15,000 Rs.		
Rate of interest	8% p.a.		
Cum-interest investment every year-end	63,000 Rs.		$15000*(4+8\%+8\%*3/4+8\%*2/4+8\%*1/4)$
Years till due maturity of A/c. 01.04.2017	7		
Number of years in extension blocks	20		
Total number of years investment made	27	nper	
Maturity amount of PPF after 4 extensions	7,819,636	fv	$FV(8\%,27,-63000,-290000,0)$

8) A)			
Roger's Age today	29		
Roger's age of retirement	58		
Roger's expected life	75		
Angela's expected life	80		
Current monthly household expenses	30,000		
Step 1			
Inflation adjusted Monthly exp at the expected life of	352,155		$FV(0.055,75-29,-)$
No. of months where 50% of pre-retirement household expenses are required ie. from Roger's expected life to Angela's expected life	36	$When\ Roger\ will\ turn\ 75\ Angela\ will\ be\ 77.\ Hence,\ additional\ number\ of\ years\ in\ which\ 50\% \ of\ pre-retirement\ expenses\ are\ required\ till\ Angela's\ expected\ life\ is\ 3\ years$	
PV of future expenses of Angela to the extent of 50% pre-retirement expenses at the expected age of Roger	6,252,395		$PV((1.065/1.055)^{(1/12)}-1,36,-352155*50\%,0,1)$
PV of such additional expenses at Roger's retirement	2,143,399		
Step 2			
Monthly exp at the age of retirement ie. 58 yrs	141,724		$FV(0.055,29,-,30000,1)$
No. of months where 70% of pre-retirement household expenses are required	204		$(75-58)*12$
PV of at the age of retirement for the period for which 70% of pre-retirement expenses are required	(18706006)		$PV((1.065/1.055)^{(1/12)}-1,(75-58)*12,141724*70\%,0,1)$
Amount to be accumulated on retirement	20849405		$2143399-(-18706006)$
Step 3			
Accumulated PPF A/c. proceeds	7000000		
Balance corpus to be accumulated	13849405		$20849405-7000000$
Existing balance in Balanced MF scheme	225,000		
Return expected from Balanced MF scheme	9% p.a.		
	0.7207% p.m.		$(1+9\%)^{(1/12)}-1$
Per month amount to be invested	-7116		$PMT(0.7207\%,29*12,-225000,13849405,1)$

9) **A)**

10)	A)		
	Current cost of trip	200,000	
	Cost of trip 11 years hence	360,418	$200000 * 1.055^{11}$
	No. of years for which trip is undertaken 2021 to 2036	16	
	Corpus reqd as on 1 April 2021	4048088	$PV((1.11/1.055)^{-1,16}, -360418, 0, 1)$
	Annual investment required from April, 2010 to April, 2010, i.e. 11 years		$PMT(11\%, 11, 0, 4048088, 1)$
		(186435)	

11)	A)		
	Step 1		
	Current cost for Stephanie's marriage	1,500,000	
	Period left for marriage	25 years	
	Inflation adjusted cost for Stephanie's marriage	5,720,089	$FV(0.055, 25, 0, -1500000, 1)$
	Value of equity shares on Stephanie's marriage	5,366,258	$FV(0.11, 25, 0, -395000, 1)$
	Balance amount to be accumulated for Stephanie's marriage	353,830	$5720089 - 5366258$
	PV at Mark's age of marriage of the future value of the balance amount required for Stephanie's Marriage	287,177 (A)	$353830 / 1.11^2$
	Step 2		
	Current cost for	1,500,000	
	Period left for marriage	23	
	Cost of Mark's marriage 23 years from now	5,139,227 (B)	$FV(0.055, 23, 0, -1500000, 1)$
	Total amount required to meet the cost of Mark's marriage after 23 years and sustain the balance to meet cost of Stephanie's marriage	5,426,404 (A+B)	$287177 + 5139227$
	Amount to be accumulated through SIP for 15 years from today	2,354,660	$5426404 / 1.11^8$
	Amount of SIP to be made every month	(5,387)	$PMT(1.11^{(1/12)} - 1, 15 * 12, 0, 2351660, 1)$

12)

A)

	Amount required for Mark	No. of Years	Cost of education in the required year for Mark	Amount required for Stephanie	Cost of education in the required year for Stephanie	PV as on 1/04/2024
First withdrawal for Mark on 1st April 2024	300,000	14	634,827			634,827
Second withdrawal for Mark on 1st April 2025	200,000	15	446,495			402,248
Third withdrawal for Mark on 1st April 2026	200,000	16	471,053			382,317
Fourth withdrawal for Mark and First withdrawal for Stephanie on 1st April 2027	350,000	17	869,681	300,000	745,441	1,180,963
Fifth withdrawal for Mark and Second withdrawal for Stephanie on 1st April 2028	350,000	18	917,513	200,000	524,293	949,763
Third withdrawal for Stephanie on 1st April 2029		19		200,000	553,129	328,255
Fourth withdrawal for Stephanie on 1st April 2030		20		350,000	1,021,215	545,983
Fifth withdrawal for Stephanie on 1st April 2031		21		350,000	1077382	518,930
						4943286

Funds required on 1st April 2024

4,943,286

Accumulation of investment through SIP mode 1 year prior to first withdrawal, i.e. on 31st March, 2023

4,453,411

Value of current investments in equity mutual scheme

485,000

(7,718) $PMT(1.11^{(1/12)}-1,13*12,-485000,4453411,1)$

13)

A)

As per Section 56(1)(vii) of Income Tax Act 1961 [As amended by Finance Act,2009 w.e.f. 1-Oct-2009 Gifts received in kind would also be taxable as per the method prescribed]

14)

A)

As per Section 94(7) of Income Tax Act 1961

15)

A)

Capital gains purchased on original shares purchased on 1st April 2009		
Sales Consideration	75,000	250×300
Cost of acquisition	37,500	250×150
Short term capital gains	37,500	$75000 - 37500$
Capital gains purchased on bonushares allotted on 7th August 1998		
Sales Consideration	15,000	50×300
Cost of acquisition	0	
Long term capital gains	15,000	$15000 - 0$
Capital gains purchased on original shares purchased on 1st May 1979		
Sales Consideration	15,000	50×300
Indexed Cost of acquisition	12,640	$50 \times 40 \times (632/100)$
Long term capital gains	2,360	$15000 - 12640$
Total Capital Gains	54,860	$2360 + 15000 + 37500$