

Solutions - Rahul

- 1) **C)**  
 Present age of Aditi = 43 years  
 Age of Aditi when Rahul Retires = 57 years  
 Life expectancy of Aditi = 77 years  
 Annuity needed = 77-57 = **20 years**

2) **B)**

Current Market Value of House	8000000
Insurance Cover	6000000
Since Insurance Cover is less than the house value, Average Clause shall become applicable	
Claim Amount	1162500 $[(6000000/8000000)*1550000]$
Less Deductible	100000
Net Claim Amount	1062500 $1162500-100000$

- 3) **C)**  
 Inflation Adjusted Rate of Return 5.66%  $[(1.12/1.06)-1]$   
 Annual Amount Invested 35000

Age Ajay	Age Preeti	Current Cost	MF	Years	PV of sums required at the investment rate today
			687910		168,954 $297754/(1.12)^{(5-0)}$
16	12	$FV(12\%,10,-35000,0,1)$		0	179,666 $354630/(1.12)^{(6-0)}$
17	13			1	151,336 $334556/(1.12)^{(7-0)}$
18	14			2	152,311 $422370/(1.12)^{(9-0)}$
19	15			3	144,151 $447712/(1.12)^{(10-0)}$
20	16			4	136,429 $474575/(1.12)^{(11-0)}$
21	17			5	297,754 $250000*(1.06)^{(3-0)}$
22	18			6	354,630 $250000*(1.06)^{(6-0)}$
23	19			7	334,556 $250000*(1.06)^{(5-0)}$
	20			8	
	21			9	422,370 $250000*(1.06)^{(9-0)}$
	22			10	447,712 $250000*(1.06)^{(10-0)}$
	23			11	474,575 $250000*(1.06)^{(11-0)}$
					932,847

Monthly investments required to accumulate the balance amount at PV 244,937  $932847-687910$

No. of months 60  
 Rate pa 12%  
 rate effective pm 0.9489%  $[(1+0.12)^{(1/12)}-1]$

Monthly investment **5322**  
 $PMT(0.9489\%,60,-244937,0,1)$

- 4) **B)**
- |  |            |
|--|------------|
| Aditi Age                              | 43         |
| Life Expectancy                        | 77         |
| Tenure for which fund will be required | 34 $77-43$ |
| Monthly Expenses                       | 70000      |
| His Personal Expenses                  | 15000      |
| Her Monthly Contribution               | 15000      |

Net Monthly Expenses required on death of Rahul	40000	$70000-15000-15000$
Rate of Inflation	5%	
Risk Free Rate of Return	6%	
Real Rate of Return	0.9524%	$((1.06/1.05)-1)*100$
PV of monthly expenses required for the expected life of Aditi	13956865	$PV((1+0.9524\%)^{(1/12)-1,34*12,-40000,0,1})$
Existing cover	4000000	
Hence, additional cover required	9956865	$13956865-4000000$

5) **B)**  
 Tax evaded Rs. 45,000, minimum penalty Rs. 45,000 and maximum penalty Rs. 1,35,000

	45000	$150000*30\%$
	135000	$45000*3$

6) **A)**

Consideration price of the Shares of X Ltd.	3000000	
Cost of Shares of X Ltd.	1500000	
Indexed cost of acquisition after taking cost of inflation index	2150246	$150000*582/406$
Capital Gain	849754	$(3000000-2150246)$
Long Term Capital Gain Tax	169951	$849754*20\%$

a)

without taking cost of inflation index	1500000	$3000000-1500000$
Tax payable	150000	$1500000*0.1$

b)

Total Long Term Capital Gain Tax Payable will be lower of a) or b) **150000**

7) **A)**

VRS Received	2,000,000
Exempt amount under Sec 10(10C) of IT Act	500,000
Therefore the amount of VRS taxable	1,500,000
Tax @ 33.99%	509,850
Hence, amount received net of tax	1,490,150

8) **A)**  
 Quaterly Contribution 6000

Date	Outstanding Balance	Contribution during the year	Interest	Closing Balance end of FY	Calculation of Interest
1-Jun-2009	450000	18000	36760	504760	$((450000)+(6000*9/12)+(6000*6/12)+(6000*4/12))*0.08$
1-Apr-2010	504760	24000	41621	570381	$((504760+6000)+(6000*9/12)+(6000*6/12)+(6000*4/12))*0.08$
1-Apr-2011	570381	24000	46870	641251	$((570381+6000)+(6000*9/12)+(6000*6/12)+(6000*4/12))*0.08$
1-Apr-2012	641251	24000	52540	717791	$((641251+6000)+(6000*9/12)+(6000*6/12)+(6000*4/12))*0.08$
1-Apr-2013	717791	24000	58663	800455	$((717791+6000)+(6000*9/12)+(6000*6/12)+(6000*4/12))*0.08$
1-Apr-2014	800455	24000	65276	889731	$((800455+6000)+(6000*9/12)+(6000*6/12)+(6000*4/12))*0.08$
1-Apr-2015	<b>889731</b>				

10) **B)**

11)	<b>B)</b>	Face Value of MF Units	10	23rd Oct, 2005	Initial Investment	100,000.00	$10 \times 10000$
		Repurchase rate	9.04				
		Opening Balance of units			Fresh units	Closing balance	10,000.000
		Dividend - 24th Oct., 2006	16,500	Reinvested at	10.47	1,575.931	$10000 + 1575.931$
		Dividend - 8th May, 2007	20,837	Reinvested at	11.84	1,759.854	$11575.931 + 1759.854$
		Dividend - 23rd December, 2007	26,672	Reinvested at	11.28	2,364.501	$13335.786 + 2364.501$
		Value of units on 23rd March, 2009 at NAV of Rs. 9.04 per unit				141,930.59	$15700.287 \times 9.04$
		Time elapsed for investment		3 years and 5 months		3.41666667 years	$3 + (5/12)$
		<b>OR</b>		<b>CAGR</b>		<b>10.79%</b>	$(141930.59/100000)^{(1/3.4167)} - 1$
				23-Oct-2005		-100000	
				23-Mar-2009		141931	
				XIRR=		<b>10.79%</b>	

12)	<b>B)</b>	Taxability of Gold ETF				
		Consideration price of Gold ETFs sold		792635		$500 \times 1585.27$
		Cost of Gold ETFs		491500		$500 \times 983$
		Indexed cost of acquisition	2006-07 & 2008-09	551162		$491500 \times 582/519$
		Capital Gain		241473		$792635 - 551162$
		Long Term Capital Gain Tax with indexation benefit	(1)	49743		$241473 \times 20.6\%$
		Long Term Capital Gain Tax without indexation benefit	(2)	31017		$(792635 - 491500) \times 10.3\%$
		Therefore, LTCG payable	<b>(Lower of 1 and 2)</b>	<b>31017</b>		

13)	<b>C)</b>					
14)	<b>A)</b>	Present Age	46			
		Retirement Age	60			
		Life Expectancy	80			
		amount at first month after retirement	110000			
		Shares	13%			
		Inflation	5% p.a.	0.4074% p.m.		$(1+0.05)^{(1/12)} - 1$
		Debt MF Returns	8% p.a.	0.6434% p.m.		$(1+0.08)^{(1/12)} - 1$
		Equity MF Returns	12% p.a.	0.9489% p.m.		$(1+0.12)^{(1/12)} - 1$
		Inf Adj Debt Returns		0.2350% p.m.		$(1+0.006434)/(1+0.004074) - 1$
		Corpus required		20206829		$PV(0.235\%, (80-60) \times 12, -110000, 0, 1)$
		Value of 60% of existing equity shares portfolio		2379000		$3965000 \times 0.6$
		FV of 60% of Shares portfolio on retirement		13167176		$FV(13\%, 60-46, 0, -2379000, 0)$
		By Saving Rs. 150000 every year in equity mutual fund scheme ,				
		The value of units in the scheme at retirement would be		5441957		$FV(12\%, (60-46), -150000, 0, 1)$
		Total retirement corpus		18609134		$5441957 + 13167176$
		Deficit in required corpus		(1597696)		$18609134 - 20206829$

15)	<b>A)</b>					
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Solutions - Prabhat

16)

D)

		EMI	Interest		rate
1	30-Apr-02	3000000	38452.09	33126	1.1042% (13.25/12)%
2	31-May-02	2994674	38452.09	33067	38452
3	30-Jun-02	2989289	38452.09	33008	PMT(1.1042%,180,-3000000,0,0)
4	31-Jul-02	2983845	38452.09	32948	
5	31-Aug-02	2978340	38452.09	32887	
6	30-Sep-02	2972775	38452.09	32825	
7	31-Oct-02	2967148	38452.09	32763	
8	30-Nov-02	2961459	38452.09	32700	
9	31-Dec-02	2955708	38452.09	32637	
10	31-Jan-03	2949893	38452.09	32573	
11	28-Feb-03	2944013	38452.09	32508	
12	31-Mar-03	2938069	38452.09	32442	
13	30-Apr-03	2932059	38452.09	32376	
14	31-May-03	2925983	38452.09	32309	
15	30-Jun-03	2919839	38452.09	32241	
16	31-Jul-03	2913628	38452.09	32172	
17	31-Aug-03	2907348	38452.09	32103	
18	30-Sep-03	2900999	38452.09	32033	
19	31-Oct-03	2894580	38452.09	31962	
20	30-Nov-03	2888090	38452.09	31890	
21	31-Dec-03	2881528	38452.09	31818	
22	31-Jan-04	2874894	38452.09	31745	
23	29-Feb-04	2868186	38452.09	31671	
24	31-Mar-04	2861405	38452.09	31596	
25	30-Apr-04	2854548	38452.09	31520	
26	31-May-04	2847616	38452.09	31443	
27	30-Jun-04	2840607	38452.09	31366	
28	31-Jul-04	2833521	38452.09	31288	
29	31-Aug-04	2826357	38452.09	31209	
30	30-Sep-04	2819113	38452.09	31129	
31	31-Oct-04	2811790	38452.09	31048	
32	30-Nov-04	2804385	38452.09	30966	
33	31-Dec-04	2796899	38452.09	30883	
34	31-Jan-05	2789331	38452.09	30800	
35	28-Feb-05	2781678	38452.09	30715	
36	31-Mar-05	2773942	38452.09	30630	
37	30-Apr-05	2766119	38452.09	30543	
38	31-May-05	2758211	38452.09	30456	
39	30-Jun-05	2750215	38452.09	30368	
40	31-Jul-05	2742131	38452.09	30279	
41	31-Aug-05	2733957	38452.09	30188	
42	30-Sep-05	2725693	38452.09	30097	
43	31-Oct-05	2717338	38452.09	30005	
44	30-Nov-05	2708891	38452.09	29912	
45	31-Dec-05	2700351	38452.09	29817	
46	31-Jan-06	2691716	38452.09	29722	
47	28-Feb-06	2682986	38452.09	29626	
48	31-Mar-06	2674159	38452.09	29528	

49	30-Apr-06	2665235	38452.09	29430
50	31-May-06	2656213	38452.09	29330
51	30-Jun-06	2647090	38452.09	29229
52	31-Jul-06	2637867	38452.09	29127
53	31-Aug-06	2628543	38452.09	29024
54	30-Sep-06	2619115	38452.09	28920
55	31-Oct-06	2609583	38452.09	28815
56	30-Nov-06	2599946	38452.09	28709
57	31-Dec-06	2590203	38452.09	28601
58	31-Jan-07	2580352	38452.09	28492
59	28-Feb-07	2570392	38452.09	28382
60	31-Mar-07	2560322	38452.09	28271
61	30-Apr-07	2550141	38452.09	28159
62	31-May-07	2539847	38452.09	28045
63	30-Jun-07	2529440	38452.09	27930
64	31-Jul-07	2518918	38452.09	27814
65	31-Aug-07	2508280	38452.09	27696
66	30-Sep-07	2497524	38452.09	27578
67	31-Oct-07	2486650	38452.09	27458
68	30-Nov-07	2475655	38452.09	27336
69	31-Dec-07	2464540	38452.09	27213
70	31-Jan-08	2453301	38452.09	27089
71	29-Feb-08	2441938	38452.09	26964
72	31-Mar-08	2430450	38452.09	26837
73	30-Apr-08	<b>2418835</b>	38452.09	<b>26709</b>
74	31-May-08	2407092	38452.09	26579
75	30-Jun-08	2395219	38452.09	26448
76	31-Jul-08	2383215	38452.09	26315
77	31-Aug-08	2371078	38452.09	26181
78	30-Sep-08	2358807	38452.09	26046
79	31-Oct-08	2346401	38452.09	25909
80	30-Nov-08	2333858	38452.09	25770
81	31-Dec-08	2321176	38452.09	25630
82	31-Jan-09	2308355	38452.09	25489
83	28-Feb-09	2295391	38452.09	25346
84	31-Mar-09	2282285	38452.09	25201
85	30-Apr-09	2269034	38452.09	25055
86	31-May-09	2255637	38452.09	24907
87	30-Jun-09	2242091	38452.09	24757
88	31-Jul-09	2228396	38452.09	24606
89	31-Aug-09	2214550	38452.09	24453
90	30-Sep-09	2200551	38452.09	24298
91	31-Oct-09	2186398	38452.09	24142
92	30-Nov-09	2172088	38452.09	23984
93	31-Dec-09	2157620	38452.09	23824
94	31-Jan-10	2142992	38452.09	23663
95	28-Feb-10	2128203	38452.09	23500
96	31-Mar-10	2113250	38452.09	23335
97	30-Apr-10	2098133	38452.09	23168
98	31-May-10	2082848	38452.09	22999
99	30-Jun-10	2067395	38452.09	22828
100	31-Jul-10	2051771	38452.09	22656
101	31-Aug-10	2035975	38452.09	22481

311624

102	30-Sep-10	2020004	38452.09	22305
103	31-Oct-10	2003857	38452.09	22127
104	30-Nov-10	1987531	38452.09	21946
105	31-Dec-10	1971025	38452.09	21764
106	31-Jan-11	1954337	38452.09	21580
107	28-Feb-11	1937465	38452.09	21393
108	31-Mar-11	1920406	38452.09	21205
109	30-Apr-11	1903160	38452.09	21015
110	31-May-11	1885722	38452.09	20822
111	30-Jun-11	1868092	38452.09	20627
112	31-Jul-11	1850268	38452.09	20431
113	31-Aug-11	1832246	38452.09	20232
114	30-Sep-11	1814026	38452.09	20030
115	31-Oct-11	1795604	38452.09	19827
116	30-Nov-11	1776979	38452.09	19621
117	31-Dec-11	1758148	38452.09	19413
118	31-Jan-12	1739110	38452.09	19203
119	29-Feb-12	1719861	38452.09	18991
120	31-Mar-12	1700400	38452.09	18776
121	30-Apr-12	1680723	38452.09	18559
122	31-May-12	1660830	38452.09	18339
123	30-Jun-12	1640716	38452.09	18117
124	31-Jul-12	1620381	38452.09	17892
125	31-Aug-12	1599821	38452.09	17665
126	30-Sep-12	1579034	38452.09	17436
127	31-Oct-12	1558018	38452.09	17204
128	30-Nov-12	1536770	38452.09	16969
129	31-Dec-12	1515287	38452.09	16732
130	31-Jan-13	1493566	38452.09	16492
131	28-Feb-13	1471606	38452.09	16249
132	31-Mar-13	1449404	38452.09	16004
133	30-Apr-13	1426956	38452.09	15756
134	31-May-13	1404260	38452.09	15506
135	30-Jun-13	1381314	38452.09	15252
136	31-Jul-13	1358114	38452.09	14996
137	31-Aug-13	1334658	38452.09	14737
138	30-Sep-13	1310944	38452.09	14475
139	31-Oct-13	1286967	38452.09	14211
140	30-Nov-13	1262726	38452.09	13943
141	31-Dec-13	1238217	38452.09	13672
142	31-Jan-14	1213437	38452.09	13399
143	28-Feb-14	1188384	38452.09	13122
144	31-Mar-14	1163054	38452.09	12842
145	30-Apr-14	1137444	38452.09	12560
146	31-May-14	1111551	38452.09	12274
147	30-Jun-14	1085373	38452.09	11985
148	31-Jul-14	1058906	38452.09	11692
149	31-Aug-14	1032146	38452.09	11397
150	30-Sep-14	1005091	38452.09	11098
151	31-Oct-14	977737	38452.09	10796
152	30-Nov-14	950081	38452.09	10491
153	31-Dec-14	922120	38452.09	10182
154	31-Jan-15	893850	38452.09	9870

155	28-Feb-15	865268	38452.09	9554
156	31-Mar-15	836370	38452.09	9235
157	30-Apr-15	807153	38452.09	8913
158	31-May-15	777613	38452.09	8586
159	30-Jun-15	747748	38452.09	8257
160	31-Jul-15	717552	38452.09	7923
161	31-Aug-15	687023	38452.09	7586
162	30-Sep-15	656157	38452.09	7245
163	31-Oct-15	624951	38452.09	6901
164	30-Nov-15	593399	38452.09	6552
165	31-Dec-15	561499	38452.09	6200
166	31-Jan-16	529247	38452.09	5844
167	29-Feb-16	496639	38452.09	5484
168	31-Mar-16	463671	38452.09	5120
169	30-Apr-16	430339	38452.09	4752
170	31-May-16	396639	38452.09	4380
171	30-Jun-16	362566	38452.09	4003
172	31-Jul-16	328118	38452.09	3623
173	31-Aug-16	293289	38452.09	3238
174	30-Sep-16	258075	38452.09	2850
175	31-Oct-16	222472	38452.09	2457
176	30-Nov-16	186477	38452.09	2059
177	31-Dec-16	150084	38452.09	1657
178	31-Jan-17	113289	38452.09	1251
179	28-Feb-17	76088	38452.09	840
180	31-Mar-17	38476	38452.09	425

Gross Annual value is actual rent received			192000
Less : Municipal taxes paid			5000
Net annual Value			187000
Less : 30% Statutory deduction	187000*0.3	56100	
Less: Interest on Loan		311600	367700
Loss from House property			180700
Prabhat's share of loss			90350

# in case Municipal value is higher then Rent then Standard Rent will be taken as gross annual value but if actual rent received is higher than standard rent then actual rent received is taken as gross annual value.

17) B)			
EMI paid in FY 2008-09			461424
Less : Interest part for FY 2008-09			311624
Principal repayment			149800
50% share of Prabhat			74900

18) A)			
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19) A)			
Present Age of prabhat		45	
Age at retirement		60	
Expected Age at Death		80	
Present household/monthly living expenses			40000 pm
Expected exp. On first month of retirement			71897

Expected return from pension fund	10% p.a.	0.7974% per month
Inflation	6% p.a.	0.4868% per month
Inflation adjusted return		0.3092% per month
inflation adjusted monthly return		
Corpus require at the time of retirement		12,206,991 $PV(0.3092\%,12*(80-60),-71897,0,1)$

20)

**B)**

outstanding balance as on 1 apr 2009			2268908	
Less Prepayment			1000000	
Balance outstanding			1268908	$2268908-1000000$
new tenure of loan		5 years		
Rate of interest			13.25%	
PMT			29034	$PMT(13.25\%/12,60,-1268908,0,0)$
Share of prabhat			14517	$29034*0.5$
1	1-Apr-09	1268908	29034	14011 $1268908*(13.25/12)\%$
2	1-May-09	1253885	29034	13845 $1253885*(13.25/12)\%$
3	1-Jun-09	1238696	29035	13677
4	1-Jul-09	1223338	29036	13508
5	1-Aug-09	1207809	29037	13336
6	1-Sep-09	1192108	29038	13163
7	1-Oct-09	1176233	29039	12988
8	1-Nov-09	1160181	29040	12810
9	1-Dec-09	1143951	29041	12631
10	1-Jan-10	1127541	29042	12450
11	1-Feb-10	1110949	29043	12267
12	1-Mar-10	1094173	29044	12081
13	1-Apr-10	1077210	29045	11894
14	1-May-10	1060059	29046	11705
15	1-Jun-10	1042717	29047	11513
16	1-Jul-10	1025183	29048	11320
17	1-Aug-10	1007455	29049	11124
18	1-Sep-10	989530	29050	10926
19	1-Oct-10	971406	29051	10726
20	1-Nov-10	953080	29052	10524
21	1-Dec-10	934552	29053	10319
22	1-Jan-11	915818	29054	10112
23	1-Feb-11	896875	29055	9903
24	1-Mar-11	877723	29056	9692
25	1-Apr-11	858359	29057	9478
26	1-May-11	838779	29058	9262
27	1-Jun-11	818982	29059	9043
28	1-Jul-11	798966	29060	8822
29	1-Aug-11	778728	29061	8598
30	1-Sep-11	758265	29062	8373
31	1-Oct-11	737575	29063	8144
32	1-Nov-11	716656	29064	7913
33	1-Dec-11	695505	29065	7680
34	1-Jan-12	674119	29066	7443
35	1-Feb-12	652497	29067	7205
36	1-Mar-12	630634	29068	6963
37	1-Apr-12	608529	29069	6719
38	1-May-12	586179	29070	6472
39	1-Jun-12	563581	29071	6223

1.1042%

**14517**  $29034*0.5$



40	1-Jul-12	540733	29072	5971
41	1-Aug-12	517631	29073	5716
42	1-Sep-12	494273	29074	5458
43	1-Oct-12	470657	29075	5197
44	1-Nov-12	446778	29076	4933
45	1-Dec-12	422635	29077	4667
46	1-Jan-13	398225	29078	4397
47	1-Feb-13	373544	29079	4125
48	1-Mar-13	348589	29080	3849
49	1-Apr-13	323358	29081	3570
50	1-May-13	297847	29082	3289
51	1-Jun-13	272053	29083	3004
52	1-Jul-13	245974	29084	2716
53	1-Aug-13	219606	29085	2425
54	1-Sep-13	192946	29086	2130
55	1-Oct-13	165990	29087	1833
56	1-Nov-13	138735	29088	1532
57	1-Dec-13	111179	29089	1228
58	1-Jan-14	83317	29090	920
59	1-Feb-14	55147	29091	609
60	1-Mar-14	26665	29092	294

21) **A)**

Sale Consideration	2500000	
Less : Expense on transfer	100000	
Less : Indexed Cost of Acquisition	1121387	$1000000 * (582/519)$
LTCG=	<b>1278613</b>	$2500000 - (100000 + 1121387)$

22) **D)**

23) **A)**

Gross return obtained	11% p.a.	
After Tax return	7.7% p.a.	$11\% * (1 - 0.3)$
Inflation	6% p.a.	
Inflation adjusted post tax return	<b>1.60%</b>	$(1 + 7.7\%) / (1 + 6\%) - 1$

24) **B)**

25) **A)**

Annual expenses for higher education at the end of one year	350,000	
These expenses discounted at the investment rate of 15% today		304,348 $350000/1.15$
Annual expenses for higher education at the end of 2nd year	378,000	
These expenses discounted at the investment rate of 15% today	$350000 * 1.08$	285,822 $378000/1.15^2$
Annual expenses for higher education at the end of 3rd year	408,240	
These expenses discounted at the investment rate of 15% today	$350000 * 1.08^2$	268,424 $408240/1.15^3$
Annual expenses for higher education at the end of 4th year	440,899	
These expenses discounted at the investment rate of 15% today	$350000 * 1.08^3$	252,086 $440899/1.15^4$
Annual expenses for higher education at the end of 5th year	476,171	
These expenses discounted at the investment rate of 15% today	$350000 * 1.08^4$	236,741

Total expenses adjusted for inflation and discounted at the investment rate,  
 i.e PV of sum required 476171/1.15^5  
1,347,421  
304348+285822+268424+252086+236741

Rate of investment 15% pa  
 Rate of investment 1.1715% pm (1+15%)^(1/12)-1  
 Therefore, the amount of SIP monthly to achieve this PV starting today for 5 years 31,029 PMT(D322,60,-H318,0,1)

26) **B)**  
 Sum Assured 500000  
 Add Bonus  
 300000 60\*500\*10  
 150000 50\*500\*6

Total Claim 950000 500000+300000+150000

27) **B)**  
 Target amt 1338225.58  
 Tenure 5 years  
 Installments 60  
 PMT

Rate 7.50% pa  
 1.88% quarterly  
 7.71% (1+1.88%)^4-1  
 0.6211% p.m. (1+7.71%)^(1/12)-1  
 18360 PMT(0.6211%,60,0,-1338225.58,1)