

Solutions: Case 1 (Roger)

- Q1 B) It is a professional requirement under FPSB's Practice Guidelines.
- Q2 D) Identify other issues that may potentially impact Roger's ability to achieve financial goals
- Q3 D) As a Registered Investment Adviser, you are mandated to comply with segregation of advisory and its execution at the client level. The execution services can be independently sourced from another professional.
- Q4 A) Insure the houses for values equal to their respective reconstruction cost, used to bring each house back to its original condition, in case of happening of defined perilous event/s.
- Q5 C) The sum assured shall be applicable when Mark attains 12 years of age; withdrawal of Rs. 3 lakh each can be made during age 19, 20 and 21 of Mark.

Q6 B) Rs. 86 lakh
(Solution given below)

Current annual household expenses of family	480,000	Rs. p.a.	
Expenses required for family excluding self-expenses of Roger	384,000	Rs. p.a.	480000*(1-20%)
75% of net household expenses to be covered	288,000	Rs. p.a.	384000*75%
Present age of Angela	31		
Life expectancy of Angela	80		
Number of years of expenses to cover	49	years	80-31
Gross Returns from Debt MF scheme	7.50%	p.a.	
Tax impact on returns from Debt mutual fund scheme	8.00%	p.a.	
Tax adjusted returns from Debt MF scheme	6.90%	p.a.	7.5%*(1-8%)
Inflation	4.50%	p.a.	
Returns adjusted for inflation	2.2967%	p.a. effective	(1+6.9%)/(1+4.5%)-1
Cover (PV) required today to cover expenses till the expected life of Angela	8,611,524	Rs.	PV(2.2967%,49,-288000,0,1)

- Q7 C) Estimate the size of retirement fund needed on retirement considering life expectancy of the last survivor; find out the amount of periodic saving that can be directed to an asset allocation for wealth building in the long term to realize such retirement fund; also identify assets that can be held till retirement which can be liquidated/converted to yield a supplementary retirement income.

Q8 A) Rs. 2.90 crore

(Solution given below)

Current annual household expenses	480,000 Rs.
Current age of Roger	29 years
Retirement age of Roger	58 years
Current age of Angela	31 years
Life expectancy of Roger	75 years
Life expectancy of Angela	80 years
Number of years the retirement expenses shall be required	20 years
Inflation	4.50% p.a.
Retirement expenses in the first year of retirement	1,720,338 Rs.
<u>Bucket One:</u>	
Returns from Liquid Funds	6.00% p.a.
Provision of first five year (increasing) expenses in liquid funds	8,361,664 Rs. (1)
<u>Bucket Two:</u>	
Returns from Debt Funds	7.5000% p.a.
Retirement expenses in the sixth year of retirement	2,143,854 Rs.
Provision of next 15 years (rising) expenses in debt funds	26,575,624 Rs.
Total Provision of funds in Bucket Two on retirement	18,511,481 Rs. (2)
Buffer required of Rs. 1 crore 17 years from retirement in balanced funds (return 9.5%)	2,137,765 Rs. (3)
Total retirement corpus to be accumulated for arrangement	29,010,910 Rs. (1+2+3)

$$480000*(1+4.5\%)^{29}$$

$$PV((1+6\%)/(1+4.5\%)^{-1,5,-1720338,0,1})$$

$$1720338*(1+4.5\%)^5$$

$$PV((1+7.5\%)/(1+4.5\%)^{-1,15,-2143854,0,1})$$

$$26575624/(1+7.5\%)^5$$

$$10000000/(1+9.5\%)^{17}$$

$$8361664+18511481+2137765$$

Q9 A) The Capital Gains on redeeming these bonds on maturity are exempt from income tax.

Q10 C) The vacation goal is aspirational; has high cost escalation. Roger can consider moderate to high risk instruments to invest a certain sum of money. He is advised to postpone withdrawal from fund if the corpus after 5 years is not sufficient. In future, higher amount can be directed to this fund.

Q11 B) Mark Rs. 50.5 lakh, 17% shortfall; Stephanie Rs. 63.2 lakh, 20% shortfall
(Solution given below)

PPF account balance as on 31-March-2019	490,000 Rs.
Account's initial maturity (opened in Dec-2013) is 1-April-2029	
Number of subscriptions from 1-Apr-2019 to 1-Apr-2028	10
Number of subscriptions from 1-Apr-2029 to 1-Apr-2038 (2 extensions)	10
Rate of interest assumed throughout	7.75% p.a.
Maximum subscription in the beginning of every financial year (for 20 years)	150,000 Rs.
Accumulated balance on 31-March-2039 (Mark's age 24, Stephanie' age 21)	9,375,038 Rs.
The account is maintained without subscription for 5 more years	
Accumulated balance on 31-Mar-2040 (Mark's age 25 years)	10,101,604 Rs.
50% of accumulated amount withdrawn for Mark's marriage expenses	5,050,802 Rs.
Estimated expenses (current Rs. 10 lakh, escalating by 9% p.a.) for Mark	6,108,808 Rs.
Shortfall in meeting Mark's marriage expenses	17.32%
Remaining amount in PPF accumulated till 31-Mar-2043: Stephanie's marriage	6,318,474 Rs.
Estimated expenses (current Rs. 10 lakh, escalating by 9% p.a.) for Stephanie	7,911,083 Rs.
Shortfall in meeting Stephanie's marriage expenses	20.13%

$$FV(7.75\%, 20, -150000, -490000, 1)$$

$$9375038 * (1 + 7.75\%)$$

$$10101604 / 2$$

$$1000000 * (1 + 9\%)^{21}$$

$$1 - (5050802 / 6108808)$$

$$(10101604 / 2) * (1 + 7.75\%)^3$$

$$1000000 * (1 + 9\%)^{24}$$

$$1 - (6318474 / 7911083)$$

Q12 B) Shortfall of Rs. 20.26 lakh

(Solution given below)	
Higher Education expenses, in current terms, at respective age 18, 19, 20 & 21	400,000 Rs. p.a.
Cost escalation for higher education expenses	8.00% p.a.
Expenses drawn from a fund invested in Debt instruments at	7.50% p.a.
Total accumulation period through monthly investments in Asset Allocation Fund	12 years
<u>Present Value of Higher Education Expenses after 12 years</u>	
PV of Higher Edu. Expenses of Mark at his age of 18 (after 14 years) in Debt instruments	4,732,399 Rs.
PV of such expenses after 12 years when drawn from Debt instruments	4,095,099 Rs. PV:1
PV of Higher Edu. Exp. Of Stephanie at her age of 18 (after 17 years) in Debt instruments	5,961,460 Rs.
PV of such expenses after 12 years when drawn from Debt instruments	4,152,506 Rs. PV:2
Total PV of Higher Edu. Exp. After 12 years in Debt instruments	8,247,605 Rs. PV:(1+2)
<u>Accumulation</u> Aggressive Asset Allocation (year 1 to 7)	7 years
Return expectation (aggressive)	12.00% p.a.
Monthly investment	20,000 Rs.
Accumulation in 7 years	2,576,027 Rs.
Moderate Asset Allocation (year 8 to 12)	5 years
Return expectation (moderate)	9.00% p.a.
Monthly investment	30,000 Rs.
Accumulation in 12 years	6,221,682 Rs.
Excess/(Shortfall) expected after 12 years	(2,025,924) Rs.

$$PV((1 + 7.5\%) / (1 + 8\%) - 1, 4, -400000 * (1 + 8\%)^{14}, 0, 1)$$

$$4732399 / (1 + 7.5\%)^{12}$$

$$PV((1 + 7.5\%) / (1 + 8\%) - 1, 4, -400000 * (1 + 8\%)^{17}, 0, 1)$$

$$5961460 / (1 + 7.5\%)^{12}$$

$$4095099 + 4152506$$

$$FV((1 + 12\%)^{1/12} - 1, 12 * 7, -20000, 0, 1)$$

$$FV((1 + 9\%)^{1/12} - 1, 12 * 5, -30000, -2576027, 1)$$

$$6221682 - 8247605$$

Q13 C) future capital gains tax on assets transferred to trust could be lower

Q14 B) Long term capital gains of Rs. 2.70 lakh subject to the category exemption of Rs. 1 lakh, taxable at 10.4%.

(Solution given below)

Average cost of 1,000 shares purchased prior to 1-Feb-2018	1,205	Rs.
Targeted selling price after 31-Jan-2018, after holding for more than 1 year (long term)	1,650	Rs.
Grandfathering price as on 31-Jan-2018	1,380	Rs.
Capital gains accrued up to 31-Jan-2018 are grandfathered, hence capital gains on selling after	270,000	Rs.

Q15 D) Rs. 21,589 is added to Angela's income under "Income from Other Sources" and is taxable at tax slab applicable to her in AY2020-21.

(Solution given below)

Maturity proceeds to be received in July-2019

Maturity value of FD of Rs. 2 lakh, purchased on 1-Jul-2016 @9.75% p.a.	204,875	Rs.	$200000 * (1 + 9.75\%/4)$
Maturity value of FD of Rs. 1 lakh, purchased on 1-Jul-2017 @9.25% p.a.	102,313	Rs.	$100000 * (1 + 9.25\%/4)$
Maturity value of FD of Rs. 1 lakh, purchased on 1-Jul-2018 @8.75% p.a.	102,188	Rs.	$100000 * (1 + 8.75\%/4)$
Total maturity proceeds of Fixed Deposits	409,375	Rs.	$204875 + 102313 + 102188$
Interest accrued and receivable in the FY2019-20	9,375	Rs.	$409375 - 400000$
Aproximate purchase price of SGB (issue date: 18-July-2016)	2,900	Rs.	
Number of SGBs to be bought at the quoted price	141.16	bonds	$409375/2900$
	141	rounded-off	
Coupon to be received on bonds (half-yearly on 30-Sep'19 and 31-Mar'20)	2.75%	p.a.	
Face value per unit of SGB	3,150	Rs.	
Face value of SGBs to be purchased	444,150	Rs.	
Interest to be received on SGB in FY2019-20	12,214	Rs.	$141 * 3150 * 2.75\%$
Total interest due to these transactions under 'Income from Other Sources'	21,589	Rs.	21589