

Question Paper

Portfolio Management and Mutual Funds –II (252) : Oct. 2002

Part D : Case Study (50 Points)

- This part consists of questions with serial number 1 - 5.
- Answer all questions.
- Points are indicated against each question.
- Do not spend more than 80 - 90 minutes on Part D.

Case Study

Read the case carefully and answer the following questions:

1. Identify and describe an appropriate set of investment objectives and investment constraints for Mr. Mathur. Also write an investment policy statement based on these objectives and constraints.

(8 points)
2. The Birla Mid Cap Fund has two plans – growth and dividend. Advise Mr. Mathur in selecting the plan which will suit his needs.

(6 points)
3. Calculate the excess return (Jensen's Alpha) per unit of residual risk for all the large capitalization stocks shortlisted by the fund manager. Interpret your results.

(6 points)
4. Construct an optimum portfolio from the equity stocks shortlisted by the fund managers, using the Sharpe's optimization technique.

(12 points)
5.
 - a. Briefly outline the stock selection strategy to be followed by fund managers of Birla Mid Cap Fund.
 - b. What benchmarks should be used for performance comparison of small and large capitalization stocks selected by the fund? Justify.

(4 + 4 = 8 points)
6.
 - a. Describe the risks associated with investing in the mid-cap stocks?
 - b. Compare the risk level of mid-cap funds with other types of the mutual funds.

(5 + 5 = 10 points)

Mr. Anurag Mathur is a Chartered Accountant and runs his own consultancy firm. He is 35 years old. His wife Sunitha is also a Chartered Accountant and working in an audit firm. Mr. Mathur has only one son, Gourav, and his age is 6 years. Mr. Mathur's father is also staying with them and is suffering from diabetes and high blood pressure. He needs regular medical treatment. Mr. Mathur is planning to send his son to a boarding school after one year. Presently, Mr. Mathur does not own a house. Mr. Mathur has a total cash surplus of Rs. 20 lakhs. One of his friends, Mr. Pramod Saxena an Investment Advisor, suggested him to invest in a Growth Fund scheme and short listed the Birla Mid Cap Fund

Birla Mid Cap Fund

An Open Ended Growth Scheme

Offer of Units at Rs.10 each for cash at par during the Initial Offer Period and at NAV based prices during the Continuous Offer Period

Highlights

Sponsors – The Sponsors of the Mutual Fund are Birla Global Finance Ltd., part of the Aditya Birla Group, which is a premier conglomerate of businesses in India. Sun Life Financial Services of Canada, which is a leading international financial services organization providing a diverse range of wealth accumulation and protection products and services to individuals and corporate customers, is the joint venture partner.

Scheme – An Open ended growth scheme with the objective of investing in select Mid Cap Companies aiming to achieve capital appreciation at controlled level of risk.

Liquidity – The Scheme being offered through this Offer Document is an open ended Scheme. The Scheme will offer for Sale and Repurchase, Units at NAV based prices on every Business Day on an ongoing basis, commencing not later than 30 days from the closure of Initial Offer Period. Under normal circumstances, the Mutual Fund will endeavor to dispatch the Redemption cheque within 5 Business Days from the acceptance of the Redemption request.

Transparency – The AMC will calculate and disclose the first Net Asset Value of the scheme not later than 30 days from the closure of Initial Offer Period. Subsequently, the NAV will be calculated and disclosed at the close of every Business Day. In addition the AMC will disclose details of the portfolio of the scheme on a quarterly basis.

Flexibility – Unit holders will have the flexibility to alter the allocation of their investments among the scheme(s) offered by the Mutual Fund (subject to completion of lock-in period, if any, of the units of the scheme(s) from where the units are being switched) in order to suit their changing investment needs, by easily switching between the scheme(s) / plans of the Mutual Fund.

Name of the Scheme	Birla Mid Cap Fund
Structure	Open Ended Growth Scheme
Plans	The Scheme offers two plans – Dividend and Growth. The trustee may from time to time consider declaring dividend in the dividend plan subject to availability of distributable surplus.
Objective	The fund's investment objective is to achieve long term growth of capital at controlled level of risk by primarily investing in mid-cap stocks.
Application Amount	Minimum of Rs. 5000 per application and in multiples of Rs. 1000 thereof under each Plan
Initial Offer Price	Rs.10 per Unit for cash at par
Target Amount	The Mutual Fund seeks to raise a minimum subscription amount of Rs.1 crore under the scheme during the Initial Offer Period of the Scheme and would retain any excess subscription collection
Initial Issue Expenses	The initial issue expenses with respect to the launch of this Scheme will be borne by the AMC. An Exit Load of 1.00% will be payable if Units allotted under the scheme during the Initial Offer Period are redeemed / switched-out within 1 year from the date of allotment. For Units purchased after the closure of the Initial Offer Period, Entry and / or Exit Loads may be imposed / modified prospectively, as decided by the AMC.

BACKGROUND OF THE ASSET MANAGEMENT COMPANY AND PROMOTERS

The Aditya Birla Group

The Aditya Birla Group is among India's largest business houses. Operating in the country for over 5 decades and globally for nearly 30 years, its revenues today are in excess of US\$ 5.6 billion, with net earnings of US\$ 500 million, a US\$ 6 billion asset base, a market cap of US\$ 5 billion and 7,00,000 shareholders.

The Sponsors

The sponsors of Birla Mutual Fund are Birla Global Finance Ltd. and Sun Life (India) AMC Investments Inc. (a company governed by the laws of Canada), which is a wholly-owned subsidiary of Sun Life Financial Services Company of Canada Inc. Sun Life (India) AMC Investments Inc. is a deemed sponsor under the Securities and Exchange Board of India (Mutual Funds) Regulations, 1996.

The Trustee Company

Birla Sun Life Trustee Company Ltd. (BSLTC) is a company incorporated with limited liability under the Companies Act, 1956. Under the Trust Deed dated December 16, 1994 BSLTC has been appointed as the trustee for BMF with Birla Global Finance Ltd. as the Settlor. BSLTC is a joint venture between the Aditya Birla Group and the Sun Life Financial Services Company of Canada Inc. (through its wholly-owned subsidiary Sun Life (India) AMC Investments Inc.). Both the joint venture partners hold 50% of the equity capital of BSLTC. Summary of substantial provisions of the trust deed, which may be of material interest to the unitholders:

ASSET ALLOCATION AND INVESTMENT POLICIES

The fund seeks to meet this objective by investing, normally, at least 65% of its total assets in Mid Cap stocks. For the purpose of determining mid cap stocks, the market capitalization of companies would be considered. Currently, companies that have a market capitalization between Rs. 150 crores to Rs. 1500 crs. would constitute the investment universe of the Mid Cap portion of the portfolio in line with the range

specified in the Benchmark CNX Midcap Index. This range would change in line with the change in the range of the market capitalization criterion in the Benchmark.

In order to diversify the portfolio and improve liquidity, the fund may invest in upto 35% of its net assets in 'Large Cap' and 'Small Cap' companies (i.e. companies with a market capitalization of more than Rs. 1500 crores or less than Rs. 150 Crores as per current range. The Fund manager may invest a small portion of the corpus for liquidity needs in money market instruments. Normally such investments would not exceed a maximum limit of 5%.

The following table provides the asset allocation (as a % of Net Assets) of the portfolio.

Instrument	Asset Allocation	Risk Profile of the Instrument
Equity and related instruments of companies with a market capitalization of between Rs. 150 crores to Rs. 1500 crores (Mid-Cap Stocks)	65%-100%	High
Equity and related instruments of companies with a market capitalization of more than Rs. 1500 crores or less than Rs. 150 Crores.	0-35%	High
Cash, Deposits & Money Market Instruments including Mibor linked short term papers.	0- 5%	Low to medium

These percentages would be adhered to at the point of investment in a stock. The portfolio would be reviewed quarterly to address any deviations from the aforementioned allocations due to market changes.

Change in Asset Allocation

Subject to the SEBI Regulations, the asset allocation pattern indicated may change from time to time, keeping in view market conditions, market opportunities, applicable regulations and political and economic factors. It must be clearly understood that the percentages stated above are only indicative and not absolute and that they can vary depending upon the perception of the Investment Manager, the intention being at all times to seek to protect the interests of the Unitholders. Such changes in the asset allocation will be for short term and defensive considerations.

Risk Control

There are internal investment restrictions on individual stock exposure limits and there are sector exposure limits [only applicable to general equity funds]. Also there are restrictions on level of exposure to IPOs, private placements and small companies [defined as historical turnover of less than Rs. 50 crores p.a.]

While these measures are expected to mitigate the above risks to a large extent, there can be no assurance that these risks would be completely eliminated.

Portfolio turnover

The scheme has no explicit constraints either to maintain or limit the portfolio turnover. Portfolio turnover will depend upon the circumstances prevalent at any time and would also depend on the extent of volatility in the market.

A higher churning to the portfolio could attract high transaction costs of the nature of brokerage, demat charges, stamp duty, custodian transaction charges, etc.

Benchmark

The performance of Birla Mid Cap Fund will be benchmarked to the performance of S&P CNX Midcap 200 Index. The performance of this scheme will be compared with its peers in the Industry. The performance will be placed before the Investment Committee as well as the Board of Directors of the AMC and the Trustee Company in each of their meetings.

The fund manager has identified the following large capitalization stocks for the investment purpose:

Name of the scrip	Expected return (%)	Coefficient of correlation with the market	Beta
Infosys	21.78	0.66	1.72
HLL	11.60	0.37	0.90
ACC	13.52	0.55	1.11
Dr. Reddy's Labs	6.87	0.27	0.48
Hindalco	7.78	0.41	0.62
ICICI Bank	14.98	0.52	1.22
HPCL	12.56	0.45	1.05

Risk-free rate	6.50%
Expected return on the market	11.5(%)
Expected volatility of market return	175(%) ²

END OF PART D

Part E : Caselets (50 Points)

- This part consists of questions with serial number 6 - 13.
- Answer **all** questions.
- Points are indicated against each question.
- Do not spend more than 80 - 90 minutes on Part E.

Caselet 1

Read the following caselet carefully and answer the following questions:

7. What is the rationale behind Sebi's decision to allow MFs to invest in real estate?
(6 points)
8. What are the avenues open to mutual funds for investing in real estate?
(6 points)
9. The caselet says that the AMFI subcommittee has recommended that there should be quarterly evaluation of the assets by Sebi approved property valuers. Explain the reason's behind this decision.
(8 points)

Mutual fund investors looking for options may soon have a new investment avenue. With the apex body clearing the concept and the market regulator expected to give it a green signal soon, real estate mutual schemes may soon be a reality.

The Association of Mutual Fund in India, the industry's apex body, has already cleared the report of its sub-committee – headed by Milind Barve, managing director of HDFC Mutual Fund – and will soon be sending it to the Securities and Exchange Board of India, the market regulator.

If Sebi chief GN Bajpai's words are anything to go by, real estate mutual funds should get the regulator's nod soon. "I'm for it (real estate mutual fund) as long as it helps broaden the investors' choice," said Mr. Bajpai.

The Sebi chief's words may sound like music to the industry, especially mutual funds contemplating real estate schemes. The Amfi sub-committee has addressed all major aspects of real estate mutual funds – structural, legal, those related to investments and operational.

According to Amfi chairman, AP Kurian, there are two key operational issues here: The type of fund (whether open-ended or closed-ended); and evaluation of assets (computation of net asset value).

The sub-committee has discussed three types of funds – a closed-ended fund for a minimum of three years; an interval fund redeemable at the end of three years; and an open-ended fund. It is for the respective AMC to decide which one to choose.

The closed-ended scheme will be open for 15 days, at the end of every quarter, for the sale of fresh units based on the quarterly NAV calculations.

Redemption in the closed-ended scheme will be staggered: 20% of the investment can be redeemed at NAV at the end of three years; 30% at the end of four years; and the balance at the end of five years.

In the case of an interval fund, redemption will be possible at the end of three years. The committee has recommended a stock exchange listing for the schemes to provide liquidity to the investors.

According to an industry official, who was deeply involved in the making of the report, the committee has left it to the AMC to take a call on the type of fund it wants to choose after assessing the underlying liquidity (or lack of it) of the investment.

The sub-committee has recommended quarterly evaluation of the assets by Sebi-approved 'property valuers'.

The sub-committee has also recommended that a uniform stamp duty be levied across all states in India. Alternatively, stamp duty should be waived on purchases made by real estate mutual funds registered with the Sebi.

"Stamp duty is a state subject and unless the central government decides to make it uniform, it will be difficult and time consuming to except any changes in the stamp duty frame-work," the report says.

Caselet 2

Read the following caselet carefully and answer the following questions:

10. The caselet states that Beta did not do a very good job of explaining either price or returns on stocks. What do you think is the reason for this?

(5 points)

11. The caselet says that market appears to have a sweet spot where higher returns can be expected without additional risk. Explain how an investor can earn higher returns without taking any additional risk.

(6 points)

12. According to the caselet high-BTM firms have characteristics associated with value and low-BTM firms tend to be growth firms. Comment.

(7 points)

Until just a few years ago, the investment business resounded with genteel arguments between managers with different investment approaches. Each would point to compelling reasons why his or her methods were best.

Growth managers, favored growth stocks and value managers argued convincingly that overlooked or out-of-favor companies would provide steady growth. Small-company managers spoke fondly of discovering just one or two of tomorrow's Microsofts. Large-company managers favored liquidity and well-established companies. Mid-sized company investors argued that second-tier companies offered stability, growth potential, and the opportunity to exploit market inefficiencies. The few foreign-stock managers were busy trying to convince Americans that international investing wasn't just plain crazy. (Emerging-market managers were all still in diapers).

While these arguments made for wonderful entertainment, they were unresolvable. Debaters lacked even common definitions, their discussions were devoid of appropriate yardsticks, and they lacked the necessary tools to measure performance or risk. Each management approach yielded "acceptable" positive results, but each excelled at different times. Comparisons were necessarily difficult, and managers would each stress the time frames in which their own approach excelled.

Investors could hardly be blamed if they didn't find solid guidance from Wall Street's competing gurus. The truth is, all the gurus were just blowing smoke. Nobody knew what was going on! (The idea that various types of investments might be complementary hadn't even been considered.)

A Modest Proposal

Two University of Chicago professors, Eugene Fama and Kenneth French, found an elegant way to help resolve the above problem. But in doing so, they touched off one of the liveliest debates-and biggest dogfights-finance has seen in years. While the results are surprising, their arguments are compelling. In fact, other data solidly supports their original study: Markets appear to have a sweet spot where higher returns can be expected without additional risk!

Under the Capital Asset Pricing Model (CAPM), stock prices and expected future returns are related to both market risk and a unique risk that each stock has, called "Beta." Beta is a measure of the volatility of the individual stock in relation to the market as a whole.

Everyone in finance loved CAPM. It was elegant and relatively easy to understand and explain. There was just one small problem: Beta didn't do a very good job of explaining either price or returns. In particular, CAPM and Beta left large anomalies in two areas: Small companies and low priced companies had higher-than-expected returns.

In their June 1992 article, "The Cross-Section of Expected Stock Returns" (published in the Journal of Finance), Fama and French set out to find better way to explain prices and return.

Beta is a single-factor variable. Fama and French tried a number of other factors in combination to see if they could provide a better fit. They found that together, size and Book-to-Market (BTM) ratio did the best job of explaining stock performance. BTM is the ratio of a firm's book value per share to its stock price. If you are particularly observant, you may have noticed that BTM is the inverse of Price-To-Book (P/B). This alternative figure was created out of necessity, because book value may sometimes be zero, and a ratio with zero on the bottom is impossible to use in calculations.

A firm with a high BTM has lots of assets per share compared to a low BTM firm. As it happens, high-BTM firms have characteristics associated with "value" and low-BTM firms tend to be "growth" firms. Growth and value are somewhat fuzzy terms. Everyone seems to agree that Microsoft is a growth company, but value seems to be in the eyes of the beholder. BTM provides an objective measure.

Caselet 3

Read the following caselet carefully and answer the following questions:

13. The caselet states that the most important goal of investing is capital preservation and capital appreciation cannot be achieved without preserving capital. Justify.

(5 points)

14. According to the caselet, valuation models existed almost in vacuum because they failed to incorporate the mindset of traders. Comment.

(7 points)

What is the most important goal of investing? This question is not as simple as it seems; more often than not, investors' initial responses to it highlight why so many fail to generate market-beating returns.

The most common answer you're likely to receive to this question is: "Capital appreciation, of course! How difficult can that be to understand? You invest to earn a return on your money in excess of the risk-free rate, and if you're investing in stocks that are as risky as the general market, hopefully your returns are in excess of the average returns of the Standard & Poor's 500."

Wrong answer. The most important goal of investing is *capital preservation*. While this is a subtle distinction, you can never get to the second objective of investing – appreciation – if proper precautions are not taken to preserve capital in the first place. Too many investors spend inordinate amounts of time seeking market-beating returns without imposing strict money management policies that would ensure the survival of their portfolio. As a result, they eventually lose their money.

Capital preservation is more important today than ever before. When the US equity markets were in their heyday of the 1990s, few worried about preserving their money. As the market adage says, a bull market makes everyone look smart. Many of the "CNBC Generation" believed that the stock market was only going one way, and that was up. Risk control measures interfered with riding the next inevitable wave. The old paradigm was dead, a common argument went, and a new one was emerging. There was even a 1999 Fortune article that quoted an analyst from a reputable firm who remarked, "Any time in between 9:30 am and 4:00 pm is a good time to buy Microsoft."

Insanity? It wasn't at the time. That analyst's thoughts reflected a conditioning that many were exposed to as stocks time and gain seemed to end their runs, only to break out and climb higher delivering returns in excess of 100 percent in the course of few *months*. Reality set in when suddenly the music of the market stopped, and thousands of investors rushed to sit in a few hundred chairs represent profit.

What lessons did we learn from that time that could help investors today? One fundamental lesson is that markets change, but investors don't. The various valuation techniques gives you the value of a company but it will not give you any information about how other market participants feel about the company, nor does it incorporate their irrational behavior. So in an environment like the late 1990s, valuation models existing almost in a vacuum because they failed to incorporate the mindset of traders.

END OF PART E

END OF QUESTION PAPER

Suggested Answers

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Part D : Case Study

1. Investment Objectives

Mr. Mathur is presently 35 years old and is quite rich. His liquidity requirements are high because he has to cater the needs of his ill father and child's education. Although, he would like to invest in safer securities but his risk taking capacity would not be very high. Mr. Kapoor has a sizeable working life left for him. An ideal investment policy statement for Mr. Mathur should be a blend of safety of capital and capital appreciation. He will be interested in parking his funds in avenues that would generate above average returns.

Investment Constraints

Liquidity

The liquidity requirements of Mr. Mathur are quite high.

Time Horizon

The time horizon of investment for Mr. Agarwal is fairly long because his major monetary requirements like child's education, constructing a house etc. are long-term needs.

Tax considerations

Tax considerations are very important for Mr. Mathur, Mr. Kapoor is falling in the highest tax bracket. Therefore, proper care should be taken while making investment decisions for him. His investment avenues should be such that the more and more long-term capital gains are realized from his portfolio.

Risk Consideration

The risk tolerance level of Mr. Mathur is moderate. Although he is in his initial years of carrier his liabilities of his father and child will prevent him to invest in risky assets. But, as both Mr. and Mrs. Mathur earning nicely they can devote a part of their income or savings in risky assets to gain extra returns.

Investment Policy Statement

An ideal investment policy statement will call for growth of wealth as well as regular income in the context of medium to long-term time horizon. There should be more emphasis on growth of capital with a special attention towards regular income.

2. Going by the information provided in the case, Mr. Mathur should choose both growth and dividend plans for his investment purpose. He should choose dividend plan to cater to his high liquidity needs and growth plan for his long-term important needs. Out of Rs.20 lakhs surplus he should invest at least Rs.5 lakhs in dividend plan and Rs.15 lakhs in growth. This proportion 1:3 will meet his liquidity as well as capital appreciation requirements. This combination of fund allocation submits his tax consideration as tax on dividend will be higher than tax on capital appreciation.

3.
$$\beta_i = \rho_{im} \frac{\sigma_i}{\sigma_m}$$

$$\sigma_i = \frac{\beta_i \sigma_m}{\rho_{im}}$$

$$\text{Infosys} = \frac{1.72 \times 13.23}{0.66} = 34.48\%$$

$$\text{HLL} = \frac{0.90 \times 13.23}{0.37} = 32.18\%$$

$$\begin{aligned}
\text{ACC} &= \frac{1.11 \times 13.23}{0.55} = 26.70\% \\
\text{Dr. Reddy's Labs} &= \frac{0.48 \times 13.23}{0.27} = 23.52\% \\
\text{Hindalco} &= \frac{0.62 \times 13.23}{0.41} = 20.01\% \\
\text{ICICI Bank} &= \frac{1.22 \times 13.23}{0.52} = 31.04\% \\
\text{HPCL} &= \frac{1.05 \times 13.23}{0.45} = 30.87\%
\end{aligned}$$

$$\text{Residual risk} = \sigma_{ei}^2 = \sigma_i^2 - \beta_i^2 \sigma_m^2$$

$$\begin{aligned}
\text{Infosys} &(34.48)^2 - (1.72)^2 \times 175 = 671.15 \\
\text{HLL} &(32.18)^2 - (0.90)^2 \times 175 = 893.80 \\
\text{ACC} &(26.70)^2 - (1.11)^2 \times 175 = 497.27 \\
\text{Dr. Reddy's Labs} &(23.52)^2 - (0.48)^2 \times 175 = 512.87 \\
\text{Hindalco} &(20.01)^2 - (0.62)^2 \times 175 = 333.13 \\
\text{ICICI Bank} &(31.04)^2 - (1.22)^2 \times 175 = 703.01 \\
\text{HPCL} &(30.87)^2 - (1.05)^2 \times 175 = 760.01
\end{aligned}$$

$$\begin{aligned}
\text{Abnormal return} &= \alpha \\
&= \text{Exp return} - \text{required return} \\
&= R_i - [R_f + \beta (R_m - R_f)] \\
\text{Infosys} &= 21.78 - [6.50 + 1.72 (11.5 - 6.5)] = 6.68\% \\
\text{HLL} &= 11.60 - [6.50 + 0.90 (11.5 - 6.5)] = 0.60\% \\
\text{ACC} &= 13.52 - [6.50 + 1.11 (11.5 - 6.5)] = 1.47\% \\
\text{Dr. Reddy's Labs} &= 6.87 - [6.50 + 0.48 (11.5 - 6.5)] = -2.03\% \\
\text{Hindalco} &= 7.78 - [6.50 + 0.62 (11.5 - 6.5)] = -1.82\% \\
\text{ICICI Bank} &= 14.98 - [6.50 + 1.22 (11.5 - 6.5)] = 2.38\% \\
\text{HPCL} &= 12.56 - [6.50 + 1.05 (11.5 - 6.5)] = 0.81\%.
\end{aligned}$$

$$\text{Abnormal return per unit of residual risk} = \frac{\alpha}{(\sigma_{ei})}$$

$$\begin{aligned}
\text{Infosys} &= \frac{6.68}{\sqrt{671.15}} = 0.2578 \\
\text{HLL} &= \frac{0.60}{\sqrt{893.80}} = 0.02007 \\
\text{ACC} &= \frac{1.47}{\sqrt{497.27}} = 0.0659 \\
\text{Dr. Reddy's Lab} &= \frac{-2.03}{\sqrt{512.87}} = -0.0896 \\
\text{Hindalco} &= \frac{-1.82}{\sqrt{333.13}} = -0.0997
\end{aligned}$$

$$\text{ICICI Bank} = \frac{2.38}{\sqrt{703.01}} = 0.0897$$

$$\text{HPCL} = \frac{0.81}{\sqrt{760.01}} = 0.0294.$$

The above ratio indicates the excess return produced by the stock relative to their unsystematic risk. This ratio is popularly known as information ratio (appraisal ratio). This ratio is used to measure the performance of a fund or stock. Clearly, Infosys is top performer followed by ICICI Bank, ACC, HPCL, HLL, Dr. Reddy's Labs and Hindalco.

4.

Stocks	R_i	β_i	$R_i - R_f$	$\frac{R_i - R_f}{\beta}$	Rank
Infosys	21.78	1.72	15.28	8.88	1
HLL	11.60	0.90	5.10	5.67	5
ACC	13.52	1.11	7.02	6.324	3
Dr. Reddy's Labs	6.87	0.48	0.37	0.7708	7
Hindalco	7.78	0.62	1.28	2.064	6
ICICI Bank	14.98	1.22	8.48	6.95	2
HPCL	12.56	1.05	6.06	5.77	4

Rank	Security	Beta β_i	Unsystematic risk (σ_{ei}^2)	Excess return ($R_i - R_f$)	$\frac{(R_i - R_f)\hat{a}}{\sigma_{ei}^2}$	$\frac{\hat{a}^2}{\sigma_{ei}^2}$	$\sum_{i=1}^i \frac{(R_i - R_f)\hat{a}_i}{\sigma_{ei}^2}$	$\sum_{i=1}^i \frac{\hat{a}_i^2}{\sigma_{ei}^2}$	C_i
1	Infosys	1.72	671.15	15.28	0.03916	0.00441	0.03916	0.00441	3.868
2	ICICI Bank	1.22	703.01	8.48	0.01472	0.00212	0.05388	0.00653	4.400
3	ACC	1.11	497.27	7.02	0.01567	0.00248	0.06955	0.00901	4.723
4	HPCL	1.05	760.01	6.06	0.00837	0.00145	0.07792	0.01046	4.818
5	HLL	0.90	893.80	5.10	0.00514	0.00091	0.08306	0.01137	4.862
6	Hindalco	0.62	333.13	1.28	0.00238	0.00115	0.08544	0.01252	4.686
7	Dr. Reddy's Labs	0.48	512.87	0.37	0.00035	0.00045	0.08579	0.01297	4.592

$C^* = 4.862$. Therefore, Infosys, ICICI Bank, ACC, HPCL and HLL would be selected in the optimal portfolio.

The proportion to be invested in each of the security

$$X_i = \frac{Z_i}{\sum_{j=1}^i Z_j}$$

$$\text{Where } Z_i = \frac{\beta_i}{\sigma_{e_i}^2} \left[\frac{R_i - R_f}{\beta_i} - C^* \right]$$

$$Z_{(\text{Infosys})} = \frac{1.72}{671.15} [8.88 - 4.862] = 0.01030$$

$$Z_{(\text{ICICI})} = \frac{1.22}{703.10} [6.95 - 4.862] = 0.00362$$

$$Z_{(\text{ACC})} = \frac{1.11}{497.27} [6.324 - 4.862] = 0.00326$$

$$Z_{(HPCL)} = \frac{1.05}{760.01} [5.77 - 4.862] = 0.00125$$

$$Z_{(HLL)} = \frac{0.90}{893.80} [5.67 - 4.862] = 0.00081$$

$$\sum_{j=1}^N Z_j = 0.01924$$

Required Proportion

$$\text{Infosys} = \frac{0.01030}{0.01924} = 0.5353 = 53.53\%$$

$$\text{ICICI} = \frac{0.00362}{0.01924} = 0.1881 = 18.81\%$$

$$\text{ACC} = \frac{0.00326}{0.01924} = 0.1695 = 16.95\%$$

$$\text{HPCL} = \frac{0.00125}{0.01924} = 0.0065 = 6.50\%$$

$$\text{HLL} = \frac{0.00081}{0.01924} = 0.0421 = 4.21\%$$

5. a. The investment emphasis of the Fund would be on identifying companies with sound corporate managements and prospects of good future growth. Past performance will also be a major consideration. Essentially, the focus would be on long-term fundamentally driven values. However, short-term opportunities would also be seized, provided they are supported by underlying values. As part of the investment strategy, fund will book profits regularly to take advantage of the volatility in the market.
 - b. For large capitalization stocks Sensex or Nifty can be used as benchmark while for smaller capitalization stocks OTCEI composite index can be used as benchmark. Sensex or Nifty should be used for larger capitalization stock because they represent 30 and 50 stocks from different industries having large capitalization. At over the counter exchange of India only small capitalization stocks are generally listed.
6. The important risks attached with Mid Cap stocks are as follows:
 - a. The ability to absorb business changes is low in mid-cap companies as compared to some of their larger compatriots.
 - b. These stocks may, at a particular point of time, have poor liquidity on the bourses and Volatility levels could be higher.

Investing in mid-sized companies is based on the premise that relatively small companies will increase their earnings and grow into larger, more valuable companies. However, as with all equity investing, there is the risk that a company will not achieve its expected earnings results, or that an unexpected change in the market or within the company will occur, both of which may adversely affect investment results. Historically mid-cap stocks have experienced greater volatility than other large -cap equity asset classes, and they may be less liquid than larger cap stocks. Thus, relative to larger, more liquid stocks, investing in mid-cap stocks involves potentially greater volatility and risk. The biggest risk of equity investing is that returns can fluctuate and investors can lose money. Not every investment opportunity will meet all of the stringent investment criteria mentioned to the same degree.

Investments in mid-capitalization stocks are generally riskier than large-capitalization stocks due to greater earnings and price fluctuations. The level of risk of a mid-cap fund is higher than a fund focused on large and liquid stocks. Typically, mid-cap funds are composed of small-cap companies that have recently grown into mid-sized companies as well as some large-cap companies that have decreased in market capitalization. Grouped together, this collection of "mid-sized stocks" has the benefit of small-cap growth potential without the dramatic swings that can be associated with more volatile stocks. Overall the risk ness level of mid-cap fund will be higher than a normal growth or balanced fund.

Part E: Caselets

Caselet 1

7. The following reasons could be cited for the SEBI's decision to allow mutual funds to invest in real estate:
 1. Real estate investment works as a good hedge against inflation and provides an excellent avenue of diversification of risk. The correlation of real estate's return with other traditional securities like bonds or stocks is very low. Hence, investment in the real estate reduces overall risk of the portfolio decreases.
 2. In the long term, historically the real estate has shown a consistent growth in value, even when some other traditional investment choices were less stable.
 3. There are certain tax advantages available to a real estate investors.
 4. Investment in real estate by mutual funds will definitely increase the transparency and breadth of the real estate market.
 5. Heavy reliance in some housing finance bodies can be lowered and property dealers will have a wider choice in selecting their financing avenues.
8. Real estate mutual funds can invest in equity shares, bonds and debentures of listed companies dealing in real estate or undertaking property development and mortgage-based securities, that is securitization of housing loans. These types of funds can also fund the real estate properties with a view to lease and earn regular income. They can also invest in real estate funds by undertaking real estate project finance. The realty funds can also purchase building with a view to sell them later. They can also invest in debt securities issued by development and construction companies.
9. The quarterly evaluation of assets by the SEBI approved dealers will ensure that a fair value of the real estate properties is indicated in financial statements of the realty funds. The biggest problem faced by any real estate investor is estimating the true value of real estate properties. If correct valuation is not made distribution of surplus income to the realty fund investors will be a difficult task. Again periodical evaluation by the SEBI approved dealers will ensure that mutual fund investor will not be misguided about the value of the assets managed by realty funds. This valuation will also help these funds in publishing a fair NAV of their schemes.

Caselet 2

10. Beta of a stock indicates the movement of the price of a stock with respect to change in the value of market index. It assumes that change in the price of stock is affected by change in the market conditions. In other words, it captures the movement of stock price with respect to single factor which is market. If price of a stock is affected by other factors also, beta will represent only partial change in the price of the stock. Calculation of beta is based on historical movement of a stock and therefore do not capture the future movement and expectation of investors. Typically companies which are not well established but have good growth prospectus are valued at lower prices on the other hand, well established companies having good track record are generally valued at higher price. This distortion in valuing companies comes through market perception about a particular company which is reflected in their prices. Beta can value a stock properly only when the market is the sole factor affecting the price of the stock. Beta could not predict the price and returns properly because it failed to recognize the other factors other than market for valuing stocks.
11. Higher returns from market can be extracted by investing in value stocks which are normally priced at lower prices. If an investor remains invested in these stocks for fairly long period his return will be higher and no additional risk will be there for investor as value companies improve their profit in due course of time. As these companies will mature there will be stabilization in their profit and growth. The only big question is that when you are spotting these value companies.

Caselet 3

12. Value firms are characterized by high-Book to Market ratio or low Price-Book ratio and low P/E ratio. The low price of these stocks is attributed to low return on equity, low return on assets, slow or no growth of sales, disappointing profits and other discouraging financial results. Even though they have large assets, the market will drive down the prices of their stocks since the management of these companies will not have any clear idea how to generate additional growth. Again these companies pay high dividend. They are generally troubled companies and risk of business failure is higher which is reflected in lower price to book or high Book to market ratio.

On the other hand, low Book-to Market (or high P/B) firms will have high P/Es, return on equity. As they command high P/E ratio their market prices will be also high. This is because they must have shown exponential growth of profits, sales market shares and other healthy desirable attributes. Their management will find good investment opportunities which is reflected in their high stock prices. These companies are growth companies and indicated lower Book to Market (BTM) or higher P/B ratio.

13. Without preservation of the capital, any investment objective cannot be achieved. If you preserve and add more to your capital then only capital appreciation in true sense is possible. If you are not preserving capital and adding capital appreciation to your eroding capital base over all your capital base may decline. Therefore, it can be safely said that capital appreciation cannot be achieved without preserving capital.
14. a. All the important valuation models are based on certain assumptions and do not take into account the perception of investors of underlying assets. Discounted free cash flow method of valuing companies is based on future cash flows and discount the cash flows at required rate of return of investors to get the value of companies. Dividend discount model for valuing stocks of company considers future dividend and discount them at required rate of return of investors. The required rate of return used in both models, captures partially the perception of investor which is reflected in risk premium demanded by them. The option and perception of trader or investor should be deciding factor while valuing company.