CHAPTER 2

VALUE & RETURN

Q-1 óGenerally individuals show a time preference for money.ô Give reasons for such a preference.

A-1 Individual generally prefer possession of a given amount of cash now, rather than the same at some future time. The main reason for the time preference or time value of money is the availability of investment opportunities. Other reasons are uncertainty of cash flows and preference for current consumption of goods, commodities and services.

Q-2 óAn individualôs time preference for money may be expressed as a rate.ô Explain.

A-2 Time preference rate of money can be expressed as an interest rate. Interest rate gives money its value, and facilitates the comparison of cash flows occurring at different time periods. The minimum interest rate in the absence of any risk is known as risk-free rate. It is a compensation for time. If an individual is exposed to some degree risk, he would expect a rate of return higher than the risk-free rate from the investment compensating him for both time and risk. The rate added to compensate risk is known as risk premium.

The interest rate permits the individual to convert different amounts offered at different time to amounts of equivalent value in the present, i.e., a common point of reference for decision.

Q-3 Why is the consideration of time important in financial decision-making? How can time value be adjusted? Illustrate your answer.

A-3 Most financial decisions, such as the purchase of assets or procurement of funds, affect the firmôs cash flows in different time periods. Cash flows occurring in different time periods are not comparable. Hence, it is required to adjust cash flows for their differences in timing and risk. The value of cash flows to a common time point should be calculated. To maximise of ownerôs equity, itôs extremely vital to consider the timing and risk of cash flows. The choice of the risk-adjusted discount rate (interest rate) is important for calculating the present value of cash flows.

For instance, if time preference rate is 10 percent, it implies that an investor can accept receiving Rs 100 if he is offered Rs 110 after one year. Rs 110 is the future value of Rs 100 today at 10% interest rate. Thus, the individual is indifferent between Rs 100 and Rs 110 a year from now as he/she considers these two amounts equivalent in value. You can also say that Rs 100 today is the present value of Rs 110 after a year at 10% interest rate.

Q-4 Is the adjustment of time relatively more important for financial decisions with short-range implications or for decisions with long-range implications? Explain.

A-4 Time value adjustment is important for both short-term and long-term decisions. If the amounts involved are very large, time value adjustment even for a short period will have significant implications. However, *other things being same*, adjustment of time is relatively more important for financial decisions with long range implications than with short range implications**.** Present value of sums far in the future will be less than present value of sums in near future.

Q-5 Explain the mechanics of calculating the present value of cash flows.

A-5 The present value of a future cash flow (inflows or outflows) is the amount of current cash that is of equivalent value to the decision maker today. The process of determining present value of a future payment (or receipts) or a series of future payments (or receipts) is called discounting. The compound interest rate used for discounting cash flows is called discount rate.

Present value for a lump sum amount can be worked out by using following formulae:

$$PV = \frac{\text{Fn}}{(1+\text{i})^{\text{n}}} = \text{Fn}\left[\frac{1}{(1+\text{i})^{\text{n}}}\right]$$

The term in parentheses is the Present Value Factor (PVF, of Re. 1, which can also be traced from the precalculated present value factor table).

Example: You wish to receive Rs 5,000 after five years in State Bank of India at 8% interest rate per annum by creating a fixed deposit. How much amount will you have to invest today?

$$\text{PV} = \frac{5{,}000}{(1.08)^5} = 5{,}000\left[\frac{1}{(1.08)5}\right] = 5{,}000 \times 0.681 = \text{Rs}3{,}402$$

Present value of an annuity (i.e., constant and equal periodic amount for a certain number of years) can be worked out using the following formula:

$$\text{PV} = \text{A}\left[\frac{(1+\text{i})^{\text{n}} - 1}{\text{i}(1+\text{i})^{\text{n}}}\right] = \text{A}\left[\frac{1}{\text{i}} - \frac{1}{\text{i}(1+\text{i})^{\text{n}}}\right]$$

The term in parentheses is the present value factor of an annuity of Re.1, which is available from PVAF table. Here, A is a constant flow each year.

Example: You will receive Rs 1,250 each year for six years. If the interest rate is 10% p.a., what is the present value of the amounts received?

$$\text{PV} = 1{,}250\left[\frac{1}{0.10} - \frac{1}{0.10(1.10)^6}\right] = 1{,}250[10 - 0.5645] = 1{,}250 \times 9.4355 = \text{Rs}11{,}794$$

Q-6 What happens to the present value of an annuity when the interest rate rises?

A-6 As the formulae given in A-5 above show, as the interest rate rises, the present value of a lump sum or an annuity declines. The present value factor declines with higher interest rate, other things remaining the same.

Q-7 What is multi-period compounding? How does it affect the annual rate of interest? Give an example.

A-7 If the interest is paid (or received) more than once in a year, it is known as multi-period compounding; the interest compounded more than once in a year. The actual rate of interest paid or received is called effective rate of interest. The effective interest rate would be higher than the nominal interest rate (since compounding is done more than once).

The effective rate of interest is calculated by using following formulae:

$$\text{EIR} = \left[1 + \frac{\text{i}}{\text{m}}\right]^{\text{nm}} - 1$$

Example: Suppose the annual interest rate is 12%. If the compounding is done annually, half yearly and quarterly, what are the effective rates of interest? You can use the above formula. The calculated rates are:

Annual compounding: 12%

Half-yearly Compounding: 12.36%

Quarterly Compounding: 12.55%

Q-8 What is an annuity due? How can you calculate the present and future values of an annuity due? Illustrate.

A-8 A series of cash flows (i.e., receipts or payments) starting at the *beginning* of each period for a specified number of periods is called an Annuity due. This implies that the first cash flow has occurred *today*. The future value, i.e., compound value of an annuity due is:

$$FV = A\ (CVAF_{n,i})\ (1 + i)$$

For example, if you deposit Rs.1, 000 in a saving account at the beginning of the each year for 4 years to earn 6% p.a., then the future value is:

$$FV = 1{,}000(4.375)\ (1.06) = \text{Rs. } 4{,}637$$

Notice that 4.375 is the future value factor for an annuity of Re 1 occurring at the end of the period.

The present value of an annuity due i:

$$Fn = A\ (PVAF_{n,i})\ (1 + i)$$

For example, the present value of Rs1,000 deposited in saving account at the beginning of each year for 4 years to earn interest 6% p.a. is:

$$PV = 1{,}000\ (3.170)\ (1.06) = \text{Rs. } 3{,}487$$

Q-9 How does discounting and compounding help in determining the sinking fund and capital recovery?

A-9 Sinking fund is a fund which is created out of fixed payments each period to accumulate to a future some after a specified period. For this purpose, the compound value of an annuity can be used to calculate an annuity to be deposited to a sinking fund for ónô period at ónô rate of interest to accumulate to a given sum. The equation is:

$$A = FV\left[\frac{1}{CVAF_{n,i}}\right] = FV\left[SFF_{n,i}\right]$$

It means that $SFF_{n,I}$ is a reciprocal of compound value of an annuity factor, i.e., $CVAF_{n,i.}$

Example: A company will need Rs 500,000 after seven years to redeem debentures. How much amount should it transfer each year to accumulate a fund of Rs 500,000 after seven years if the interest rate is 9%?

$$A = 500{,}000\left[\frac{1}{\frac{(1.09)^7 - 1}{0.09}}\right] = 500{,}000\left[\frac{1}{9.200}\right]$$

$$= 500{,}000 \times 0.1087 = \text{Rs}54{,}345$$

Capital recovery is the annuity of an investment for a specified time at a given rate of interest. The present value of an annuity formula can be used to determine annual cash flow to be earned to recover a given investment. The equation is :

$$A = P\left[\frac{1}{PVAF_{n,i}}\right] = P\left[CRF_{n,i}\right]$$

The capital recovery factor is a reciprocal of the present value annuity factor, i.e., $PVAF_{n,i.}$

Example: You have made an investment of Rs 300,000 for a period of five years. If the rate of interest is 11%, how much cash flow should you earn each year?

$$A = 300{,}000\left[\frac{1}{\frac{1}{0.11} - \frac{1}{0.11(1.11)^5}}\right] = 300{,}000\left[\frac{1}{3.700}\right]$$

$$= 300{,}000 \times 0.271 = \text{Rs}81{,}171$$

Q-10 Illustrate the concept of the internal rate of return.

A-10 The rate of return on an investment (based on its cash flows) is called internal rate of return (IRR). Since IRR depends on the cash flow patterns specific or *internal* to a project, itôs called internal rate of return. It is a rate where NPV is zero. Hence, IRR can be calculated manually by trial and error.

Example: A bank offers you to deposit Rs. 1,000 today and promises to pay Rs. 1,762 at the end of 5 years. What rate of return are you earning?

P = FV ($PVF_{5,I}$) = 1,000 = 1,762 ($PVF_{5,I}$) $PVF_{5,i}$ = 0.567

The PVF table shows that at 12 % column and period 5, the factor is 0.567. Hence, the internal rate of return is 12%. You can also use the following formula (and a scientific calculator) to calculate IRR:

$$1{,}000(1 + \text{IRR})^5 = 1{,}762$$

$$(1 + \text{IRR})^5 = \frac{1{,}762}{1{,}000} = 1.762$$

$$\text{IRR} = 1.762^{1/5} - 1 = 0.12 \text{ or } 12\%$$

If the factor value lies between two interest percentages, then actual rate can be worked out by using interpolation.

CHAPTER 3

VALUATION OF BONDS & SHARES

Q-1 Explain the concept of valuation of securities? Why is the valuation concept relevant for financial decision making purposes?

A-1 Financial assets are called securities. Risk and return are the determinants of value of a security. The present value of flows of income in future period and the ending price of a security is known the value of the security. The security price expected at the end of the period is difficult to predict because a number of variables influence the security prices.

Firms raise capital by issuing securities to shareholders. Since the objective of financial management is to maximize the shareholder value, the concept of value of securities is important. Similarly, the cost of raising capital depends on the value of securities.

Q-2 What is a bond? Is it same as a debenture? What are the features of a bond?

A-2 A bond is a long-term debt instrument or security. Bonds are issued by the government and the public sector companies in India. The private sector companies also issue bonds, which are generally called debentures in India. A debenture can be secured or unsecured. The features of a bond or debenture are as follows:

Face value Face value is called par value. A bond (debenture) is generally issued at a par value of Rs 100 or Rs 1,000, and interest is paid on the face value.

Interest rate Interest rate is fixed and known to bondholders (debenture holders). Interest paid on a bond/debenture is tax deductible. The interest rate is a contractual rate; itôs called a coupon rate in USA, and coupons are detachable certificates of interest.

Maturity A bond (debenture) is generally issued for a specified period of time. It is repaid on maturity.

Redemption value The value that a bondholder (debenture holder) will get on maturity is called redemption, or maturity, value. A bond (debenture) may be redeemed at par or at premium (more than par value). Redemption of a bond at discount (less than par value) will never be acceptable by bondholders.

Q.3 Illustrate the method of valuing (i) bonds in perpetuity and (ii) bonds with maturity.

A.3 In case of a bond, the rate of interest is fixed and known to the investors. The expected cash flows consist of annual interest payments or receipts and repayment of principal. The rate of return expected by invertors is an appropriate capitalization rate or discount rate.

Bonds may be redeemable after a specified period (known as bond with maturity period). Bonds in perpetuity are irredeemable bonds.

The following formula is used to determine the value of bond with maturity period.

$$B_0 = \sum_{t=1}^{N} \frac{INT_t}{(1+Kd)^t} + \frac{B_N}{(1+Kd)^N}$$

$$B_0 = \left[INT \times PVAF_{n,i}\right] + B_N \left[PVF_{n,i}\right]$$

Example: Rs. 1000 par value bond; maturity five years from now; rate of interest 7%; investorôs required rate of return 8 %. The present value of the bond will be:

$$B_0 = (70 * PVAF_{5,8\%}) + (1000 * PVF_{5,8\%})$$
$$= 70 * 3.993 + 1000 * 0.681 = \text{Rs.}960.51$$

In case of perpetuitual bond, the present value is:

$$B_0 = \frac{INT}{k_d}$$

For example, if in above example the bond will never mature then

$$B_0 = \frac{70}{8\%} = \text{Rs}\,875$$

Q-4 What is the interest rate risk? How are values of bonds affected when the market rate of interest changes? Illustrate your answer.

A-4 There is an inverse relationship between the value of a bond and the market interest rate. The bond value would decline when the market interest rate rises and *vice-versa*. For instance, the value of 10% perpetual bond declines to Rs 667 from Rs 1,000 when market interest rate rises from 10 percent to 15 percent, resulting in a loss of Rs 333 in value to bondholders. Interest rates have the tendency of rising or falling in practice. Thus investors of bonds are exposed to the interest rate risk; that is, the risk arising from the fluctuating interest rates.

Q.5 Define a yield curve. What are the reasons for an upward sloping yield curve? What is an inverted yield curve?

A.5 Yield curve shows the relationship between the yields-to-maturity (YTM) of bonds and their maturities. It is also called the term structure of interest rates. The upward sloping yield curve implies that the long-term yields are higher than the short-term yields. This is the *normal* shape of the yield curve, which is generally verified by historical evidence. However, many economies in high-inflation periods have witnessed the short-term yields being higher than the long-term yields. The inverted yield curves result when the short-term rates are higher than the long-term rates.

There are three theories that explain the yield curve or the term structure of interest rates: (1) the expectation theory, (2) the liquidity premium theory, and (3) the market segmentation theory.

Q-6 What is default risk and default risk premium? What is the relation between the default risk and credit ratings of bonds (or debentures)?

A-6 Default risk is the risk that a company will default on its promised obligations to bondholders. Bondholders can avoid the default risk by investing their funds in the government bonds instead of the corporate bonds.

The default premium is the *spread* between the promised return on a corporate bond and the return on a government bond with same maturity. The default premium will be higher for bonds with higher chances of default.

In most countries, there are credit rating companies that rate bonds according to their safety. In USA, Moodyôs and Standard and Poorôs and others provide bond ratings. In India CRISIL, ICRA, and CARE provide bond and other debt ratings. Debentures (bonds) with highest safety are rated as AAA (triple A) by CRISIL. Debentures rated BBB (triple B) and above are investment grade debentures. Debentures rated below BBB are speculative grade, and they are also known as junk bonds or high yield bonds.

Q-7 What is the difference between the valuation of a bond and of a preference share? Illustrate.

A-7 Like bonds, it is relatively easy to estimate cash flows associated with preference shares. The cash flows may include annual preference dividend and redemption value on maturity in case of redeemable preference shares. The value of the preference share would be the sum of the present values of dividends and the redemption value

Consider that a company has issued Rs 100 irredeemable preference share on which it pays a dividend of Rs 9. Assume that this type of preference share is currently yielding a dividend of 11 percent. What is the value of the preference share? The preference dividend of Rs 9 is perpetuity. Therefore, the present value of the preference share is:

$$P_0 = \frac{PDIV}{k_p} = \frac{9}{0.11} = \text{Rs } 81.82$$

Q.8 What is the meaning of term yield-to-maturity for bonds and preference shares? Is it appropriate to talk of a yield-to-maturity on a preference share that has no specific maturity date?

A.8 When the cash flows and maturity or redemption value are known for the bond (or preference shares), then by trial and error method, we can calculate the required rate of return. This rate is known as yield-to-maturity (YTM) or bondôs internal rate of return.

Q.9 What is an ordinary share? What are its features? How does it differ from a preference share and a debenture?

A.9 A share is a certificate issued to the owner acknowledging his capital contribution. An ordinary share is without any special preference. The ordinary shareholders are the legal owners of a company, and they assume the risk of ownership. They will get ordinary dividends only when management (board of directors) decides to distribute profits as dividends.

The following are the features of preference and ordinary shares:

- *Claims* Preference shareholders have a claim on assets and income prior to ordinary shareholders. Equity (ordinary) shareholders have a residual claim on a companyôs income and assets. They are the legal owners of the company.
- *Dividend* The dividend rate is fixed in the case of preference shares. Preference shares may be issued with cumulative rights, i.e. dividend will accumulate until paid off. In the case of equity shares neither the dividend rate is known, nor does dividend accumulate. Dividends paid on preference and equity shares are not tax deductible.
- *Redemption* Both redeemable and irredeemable preference shares can be issued in India. Redeemable preference shares have a maturity date while irredeemable preference shares are perpetual. Equity shares have no maturity date.
- *Conversion* A company can issue convertible preference shares. That is, after a stated period, such shares can be converted into ordinary shares.

As you may notice from above, the differences between ordinary shares and preference shares are in terms of preference with regard to payment of dividend, claims on assets, and redemption. The differences between an ordinary share and a debenture are: the holders of ordinary shares are owners of the company and they have voting rights; the bondholders are lenders and do not have any voting rights; they have voting rights; they are owners of residue and bear the risk of the business; payment of dividend on ordinary shares is at the discretion of management and dividend paid is not allowed as an expense; payment of interest to bondholders is a legal obligation, and interest paid is tax deductible.

Q.10 Explain in detail the method of valuing an ordinary share?

A.10 Cash flows of an ordinary (or equity) share consist of the stream of dividends and terminal price of the share. Unlike the case of a bond, cash flows of a share are not known. Thus, the risk of

holding a share is higher than the risk of a bond. Consequently, equity capitalisation rate will be higher than that of a bond. The general formula for the share valuation is as follows:

$$P_0 = \frac{DIV_1}{(1+k_e)^1} + \frac{DIV_2}{(1+k_e)^2} + \cdots + \frac{DIV_1 + P_n}{(1+k_e)^n}$$

As the time horizon, *n*, becomes very large (say, extends to infinity) the present value of future price approaches zero. Thus the term P_n disappears from the formula, and we can use the following equation to find the value of a share today:

$$P_0 = \sum_{t=1}^{n=\infty} \frac{DIV_1}{(1+k_e)^t}$$

If dividends do not grow, then capitalising earnings can determine the share value. Under no-growth situation, earnings per share (EPS) will be equal to dividends per share (DIV) and the present value is obtained by capitalizing earnings per share:

$$P_0 = \frac{DIV_1}{k_e} = \frac{EPS_1}{k_e}$$

In practice, dividends do grow over years. If we assume dividends to grow at a constant rate, *g*, then $DIV_1 = DIV_0 (1 + g)$, $DIV_2 = DIV_1(1 + g)$, $DIV_3 = DIV_2 (1 + g)$..., and the share price formula can be written as follows:

$$P_0 = \frac{DIV_1}{k_e - g}$$

This formula is useful in calculating the equity capitalisation rate (k_e) when the price of the share (P_0) is known. Under the assumption of constant growth, the share value is equal to the capitalized value of earnings plus the value of growth opportunities as shown below:

$$P_0 = \frac{EPS_1}{k_e} + V_g$$

The price of a ógrowth stockô is not merely the capitalised value of earnings but it also includes the present value of growth opportunities.

Given a firmôs EPS, ROE, the equity capitalisation rate, retention ratio and constant growth, the growth opportunities can be valued as follows:

$$V_g = \frac{NPV_1}{k_e - g} = \frac{b \times EPS_1(ROE - k_e)}{k_e(k_e - g)}$$

Q-11 What is the perpetual growth model? What are its assumptions? Is this model applicable in a finite case?

A-11 The present value of a share is equal to the dividend after a year, DIV_1, divided by the difference of the capitalisation rate (k_e) and the growth rate (g); that is, (k_e ï g). Equation in the perpetual growth model is:

$$P_0 = \frac{DIV_1}{k_e - g}$$

It is based on the following assumptions

- The capitalisation rate or the opportunity cost of capital must be greater than the growth rate, ($k_e > g$).

- The initial dividend per share, DIV_1, must be greater than zero (i.e., $DIV_1 > 0$)..
- The relationship between k_e and g is assumed to remain constant and perpetual.

This model is not applicable in a finite case.

Q.12 Why are dividends important in determining the present value of a share? How would you account for the positive market value of companyôs share which currently pays no dividend?

A.12 For shareholders in general the expected cash inflows consist only of future dividends and. therefore, the value of an ordinary share is determined by capitalizing the future dividend stream at an appropriate rate of discount. Secondly, shareholders doe not hold shares in perpetuity. They finally sell shares to obtain the capital gains.

A firm paying no dividends does command positive market prices for its shares since the price today depends on the future expectation of dividends; ultimately, shareholders will be able to realise capital gains. The dividend capitalization model is a valid share valuation model even for those companies which are not presently paying dividends..

Q.13 What is the difference between the expected and the required rates of return in the context of ordinary shares? When would this difference banish?

A.13 The required rate of return (k_e) will depend upon the riskiness of the share. It will be equal to the risk-free rate of interest plus the risk-premium to account for the riskiness of the share.

$$k_e = \frac{DIV_1}{P_0} + g$$

The expected rate of return is the rate of return which an investor can expect if he / she purchases the share at the current maker price. The expected rate of return (r_e) is same as the internal rate of return on an asset.

$$r_e = \frac{DIV_1}{P_0} + \frac{P_1 - P_0}{P_0}$$

$$r_e = \frac{\text{Expected Dividend}}{\text{Current Price}} + \frac{\text{Expected increase in Price}}{\text{Cureent Price}}$$

$$r_e = \text{Expected Dividend yield} + \text{Expected Capital gain}$$

When the expected rate of return is less than k_e, then the selling pressure increases which brings down the market price of share. So, through open market trading the difference between k_e and r_e return banishes.

Q.14 Illustrate with the help of an example, the linkage between share price and earnings. What is the importance of price-earnings (P/E) ratio? What are its limitations?

A.14 From the view of investors, ordinary shares can be (1) growth shares or (2) income shares. Growth shares are those which offer grater opportunity for capital gains by following high retention policy. Income shares are those which pay higher dividends, and offers low prospect for capital gains. The investors who want regular income would prefer to buy income shares, while the investors who want higher return via capital gains would prefer to buy growth shares.

The linkage between share price, and earnings and dividends can be explained by following formula used for value of ordinary shares.

$$P_0 = \frac{DIV_1}{k_e - g} = \frac{EPS_1 (1 - b)}{k_e - r \times b}$$

Here b = relation ratio; k_e = opportunity cost of capital; and r = rate of return earned

The firm follows a constant policy of dividend payout of 60%, earns 20% rate of return, and its earnings and dividends will grow perpetually at 8%. The expected EPS of next year is Rs.6.67 and the expected rate of return by investor is 12%. What would be the price of the companyôs share?

$$P_0 = \frac{EPS_1(1-b)}{k_e - r_b} = \frac{DIV_1}{k_e - g}$$

$$= \frac{6.67(1-0.40)}{0.12-(0.2*0.4)} = \frac{4}{0.12-0.08} = \text{Rs.}100$$

P/E ratio is calculated as the price of share divided by earnings per share. P/E ratio is basically the reciprocal of earnings yield (i.e, earnings-price ratio). A P/E ratio can mislead about the performance of a share. A high P/E ratio is considered good but it could be high not because the share price is high but because the earnings per share are quite low. P/E ratio can be manipulated and changed by accounting policies, which may distort the fair estimation of earnings. So, it is quite difficult to interpret EPS meaningfully and rely on EPS and P/E ratio as measure of performance.

Q.15 What is meant by growth opportunities? How are they valued? Illustrate.

A.15 The growth opportunities are created by firm by retention of earnings (i.e., reinvestment of retained earnings) in its operations. Retention of earnings adds value since it generates cash flows. Given a firmôs EPS, ROE, the equity capitalisation rate, retention ratio and constant growth, the growth opportunities can be valued as follows:

$$V_g = \frac{NPV_1}{k_e - g} = \frac{b \times EPS_1(ROE - k_e)}{k_e(k_e - g)}$$

We can also rewrite the formula to obtain relationship between the earnings-price ratio and capitalisation rate as follows:

$$E/P \text{ ratio} = \frac{EPS_1}{P_0} = k_e\left[1 - \frac{V_g}{P_0}\right]$$

The E/P ratio will equal the capitalization rate only when growth opportunities are zero, otherwise it will either over-estimate or under-estimate the capitalization rate.

CHAPTER 4

RISK AND RETURN

Q-1 What is a return? Explain the components of (total) return? Should unrealised capital gain (or loss) be included in the calculations of returns?

A-1 Return can be defined as excess over initial investment earned over a period of time. Return can be calculated in terms of rupee return and/or percentage return. Return can be calculated for both real and financial assets. In case of shares, rate of return would consist of dividend yield and capital gain yield. Note that the unrealised capital gain (or loss) is included in the calculation of return.

Q-2 Illustrate the computation of the expected rate of return of an asset.

A-2 The *expected rate of return* [$E(R)$] is the sum of the product of each outcome (return) and its associated probability:

Expected rate of return = rate of return under scenario 1 × probability of scenario 1 + rate of return under scenario 2 × probability of scenario 2 +é + rate of return under scenario n × probability of scenario n

Economic Conditions (1)	***Rate of Return (%) (2)***	***Probability (3)***	***Expected Rate of Return (%) (4) = (2) (4)***
Growth	18.5	0.25	4.63
Expansion	10.5	0.25	2.62
Stagnation	1.0	0.25	0.25
Decline	ï 6.0	0.25	ï 1.50
		1.00	6.00

Q-3 Define holding-period return. How is it calculated?

A-3 Investors may hold their investment in shares for longer periods than for one year. Suppose you invest Rs 1 today in a companyôs share for five years. The rates of return are 18 percent, 9 percent, 0 percent, - 10 percent and 14 percent. What is the worth of your shares? You hold the share for five years; hence, you can calculate the worth of your investment assuming that each year dividends from the previous year are reinvested in shares. The worth of your investment after five years is:

$$\begin{aligned}\text{Investment worth after five years} &= (1+0.18)\times(1+0.09)\times(1+0.0)\times(1-0.10)\times(1+0.14)\\ &= 1.18\times1.09\times1.00\times0.90\times1.14\\ &= \text{Rs } 1.32\end{aligned}$$

Your one rupee investment has grown to Rs 1.32 at the end of five years. Thus your *total* return is: 1.32 ï 1 = 0.32 or 32 percent. Your total return is a *five-year holding-period return*. The compound annual rate of return is as follows:

$$\text{Compound annual rate of return} = \sqrt[5]{1.18 \times 1.09 \times 1.00 \times 0.90 \times 1.14} - 1$$
$$= 1.057 - 1 = 0.057 \text{ or } 5.7\%$$

Q-4 What is risk? How can risk of a security be calculated? Explain your answer with the help of an example.

A-4 Risk of returns is the variability in rates of return. The variability of rates of return may be defined as the extent of the deviations (or dispersion) of individual rates of return from the average rate of return. There are two measures of this dispersion: variance or standard deviation. Standard deviation is the square root of variance.

The formulae calculating variance and standard deviation of historical rates of return of a share as follows:

$$\sigma^2 = \frac{1}{n-1}\sum_{t=1}^{n}\left(R_t - \overline{R}\right)^2$$

$$\sigma = \sqrt{\sigma^2} = \sqrt{\frac{1}{n-1}\sum_{t=1}^{n}\left(R_t - \overline{R}\right)^2}$$

The share of Hypothetical Company Limited has the following anticipated returns with associated probabilities:

Return (%)	–20	–10	10	15	20	25
Probability	0.05	0.10	0.20	0.25	0.20	0.15

The risk, measured in terms of variance and standard deviation, is:

$$\sigma^2 = (-20-13)^2 \times 0.05 + (-10-13)^2 \times 0.10 + (10-13)^2 \times 0.20 + (15-13)^2 \times 0.25$$
$$+ (20-13)^2 \times 0.20 + (25-13)^2 \times 0.15 + (30-13)^2 \times 0.05 = 156$$
$$\sigma = \sqrt{156} = 12.49\%$$

The expected rate of return is:

$$E(R) = -20 \times 0.05 + -10 \times 0.10 + -10 \times 0.20 + 15 \times 0.25 + 20 \times 0.20 + 25 \times 0.15 + 30 \times 0.05 = 13\%$$

Q-5 What is a risk-free security? What is risk premium? How can it be estimated from historical data?

A-5 A risk free security is a security which is free from risk of default and the variability on its returns is the lowest. The 28-year average return on the stock market (Sensex) is higher by 8.76 per cent in comparison with the average return on the long-term government bonds for the same period in India. This excess return is a compensation for the higher risk of the return on the stock market; it is commonly referred to as *risk premium*.

Q-6 What is a normal distribution? How does it help to interpret standard deviation?

A-6 The normal distribution is a smooth, symmetric, continuous, bell-shaped curve. The distribution is neither skewed nor peaked. The spread of the normal distribution is characterised by the standard deviation. It is useful to notice certain properties of a normal distribution.

- The area under the curve sums to1.
- The curve reaches its maximum at the expected value (mean) of the distribution and one-half of the area lies on either side of the mean.
- Approximately 50 percent of the area lies within ± 0.67 standard deviations of the expected value; about 68 per cent of the area lies within ± 1.0 standard deviations of the expected value; 95 per cent of the area lies within ± 1.96 standard deviation of the expected value and 99 percent of the area lies within ± 3.0 standard deviations of the expected value.

CHAPTER 5

RISK AND RETURN: PORTFOLIO THEORY AND ASSETS PRICING MODELS

Q1. Illustrate the computation of the expected rate of return of an asset.

A1 The expected rate of return of individual assets can be calculated using the following equation:

$$E(R_x) = (R_1 \times P_1) + (R_2 \times P)_2 + (R_3 \times P_3) + ... + (R_n \times P_n)$$

$$E(R_x) = \sum_{i=1}^{n} R_i P_i$$

Note that $E(R_x)$ is the expected return on asset X, R_i is i^{th} return and P_i is the probability of i^{th} return. Consider an example.

State of Economy	Probability	Return (%)
A	0.10	-8
B	0.20	10
C	0.40	8
D	0.20	5
E	0.10	-4

The expected rate of return of *X* is the sum of the product of outcomes and their respective probability. That is:

$$E(R_x) = (-8 \times 0.1) + (10 \times 0.2) + (8 \times 0.4) + (5 \times 0.2) + (-4 \times 0.1) = 5\%$$

Q2. What is risk? How can risk of a security be calculated? Explain your answer with the help of an example.

A2 Risk of returns is the variability in rates of return. The variability of rates of return may be defined as the extent of the deviations (or dispersion) of individual rates of return from the average rate of return. There are two measures of this dispersion: variance or standard deviation. Standard deviation is the square root of variance. The formulae calculating variance and standard deviation of historical rates of return of a share as follows:

$$\sigma^2 = \frac{1}{n-1} \sum_{t=1}^{n} \left(R_t - \overline{R}\right)^2$$

$$\sigma = \sqrt{\sigma^2} = \sqrt{\frac{1}{n-1} \sum_{t=1}^{n} \left(R_t - \overline{R}\right)^2}$$

The share of Hypothetical Company Limited has the following anticipated returns with associated probabilities:

Return (%)	–20	–10	10	15	20	25
Probability	0.05	0.10	0.20	0.25	0.20	0.15

The risk, measured in terms of variance and standard deviation, is:

$$\sigma^2 = (-20-13)^2 \times 0.05 + (-10-13)^2 \times 0.10 + (10-13)^2 \times 0.20 + (15-13)^2 \times 0.25$$
$$+ (20-13)^2 \times 0.20 + (25-13)^2 \times 0.15 + (30-13)^2 \times 0.05 = 156$$
$$\sigma = \sqrt{156} = 12.49\%$$

Q3. What is a portfolio? How is the portfolio return and risk calculated for a two-security portfolio?

A3 A portfolio is a bundle or a combination of individual assets or securities. The portfolio theory provides a normative approach to investors to make decisions to invest their wealth in assets or securities under risk.[1] It is based on the assumption that investors are *risk-averse*

The *expected rate of return on a portfolio* (or simply the *portfolio return*) is the weighted average of the expected rates of return on assets in the portfolio

Expected return on portfolio = weight of security X × exp ected return on security X
+ weight of security Y × expected return on security Y

$$E(R_p) = w \times E(R_x) + (1-w) \times E(R_y)$$

Note that *w* is the proportion of investment in asset *X* and (*1 – w*) is the remaining investment in asset *Y*

The risk of a portfolio could be measured in terms of its variance or standard deviation. The *portfolio variance* or *standard deviation* depends on the co-movement of returns on two assets. Covariance of returns on two assets measures their co-movement. Three steps are involved in the calculation of covariance between two assets:

1. Determine the expected returns on assets.
2. Determine the deviation of possible returns from the expected return for each asset.
3. Determine the sum of the product of each deviation of returns of two assets and respective probability.

Covariance is also equal to the product of the standard deviations of the returns on assets and their correlation.The variance of two-security portfolio is given by the following equation:

$$\sigma_p^2 = \sigma_x^2 w_x^2 + \sigma_y^2 w_y^2 + 2 w_x w_y \, \text{Covar}_{xy}$$
$$= \sigma_x^2 w_x^2 + \sigma_y^2 w_y^2 + 2 w_x w_y \sigma_x \sigma_y \, \text{Cor}_{xy}$$

Q4. Does diversification reduce the risk of investment? Explain with an example.

A4 Yes, diversification reduces the risk of investment. Let us consider an example

Suppose you have the following two investment opportunities: *A* and *B*:

Economic		*Returns (%)*	
Condition	*Probability*	*A*	*B*
Good	0.5	40	0
Bad	0.5	0	40

The expected rate of return, variance and standard deviation of *A* are:

$$E(R_A) = 0.5 \times 40 + 0.5 \times 0 = 20\%$$
$$\sigma_A^2 = 0.5(40-20)^2 + 0.5(0-20)^2 = 400$$
$$\sigma_A = \sqrt{400} = 20\%$$

Similarly, the expected rate of return, variance and standard deviation of *B* are:

$$E(R_B) = 0.5 \times 0 + 0.5 \times 40 = 20\%$$
$$\sigma_B^2 = 0.5(0-20)^2 + 0.5(40-20)^2 = 400$$
$$\sigma_B = \sqrt{400} = 20\%$$

Both investments *A* and *B* have the same expected rate of return (20 percent) and same variance (400) and standard deviation (20 percent). Thus, they are equally profitable and equally risky. How does combining investments *A* and *B* help an investor? If a portfolio consisting of equal amount of *A* and *B* were constructed, the portfolio return would be:

$$E(R_P) = 0.5 \times 20 + 0.5 \times 20 = 20\%$$

This return is the same as the expected return from individual securities, but without any risk. Why? If the economic conditions are good, then *A* would yield 40 percent return and *B* zero and the portfolio return will be:

$$E(R_P) = 0.5 \times 40 + 0.5 \times 0 = 20\%$$

When economic conditions are bad, then *A*ôs return will be zero and *B*ôs 40 percent and the portfolio return would still remain the same:

$$E(R_P) = 0.5 \times 0 + 0.5 \times 40 = 20\%$$

Thus, by investing equal amounts in *A* and *B*, rather than the entire amount only in *A* or *B*, the investor is able to eliminate the risk altogether. She is assured of a return of 20 percent with a zero standard deviation

Q5. Define systematic and unsystematic risks. Give examples of both.

A5 Systematic risk arises on account of the economy-wide uncertainties and the tendency of individual securities to move together with changes in the market. This part of risk cannot be reduced through diversification. It is also known as market risk. Investors are exposed to market risk even when they hold well-diversified portfolios of securities. The examples of systematic risk are: change in corporate tax rate; deficit financing; restrictive credit policy etc.

Unsystematic risk arises from the unique uncertainties of individual securities. It is also called unique risk. These uncertainties are diversifiable if a large numbers of securities are combined to form well diversified portfolios. Uncertainties of individual securities in a portfolio cancel out each other. Thus unsystematic risk can be totally reduced through diversification. The examples of unsystematic risk are: workers strike in a company; a company loses a contract; CEO of a company dies; the company finds a cheaper source of material etc.

Q6. Explain the principle of dominance. Define the efficient portfolio and efficient frontier.

A6 A risk-averse investor will prefer a portfolio with the highest expected return for a given level of risk or prefer a portfolio with the lowest level of risk for a given

level of expected return. In the portfolio theory, this is referred to as the *principle of dominance*.

An efficient portfolio is one that has the highest expected returns for a given level of risk. The efficient frontier is the frontier formed by the set of efficient portfolios. All portfolios on the efficient frontier are efficient portfolios. All other portfolios, which lie outside the efficient frontier, are inefficient portfolios.

Q7. What is the portfolio theory? Explain the assumptions and principles underlying the portfolio theory?

A7. The portfolio theory provides a normative approach to investors to make decisions to invest their wealth in assets or securities under risk. It is based on the assumption that investors are *risk-averse*. This implies that investors hold well-diversified portfolios instead of investing their entire wealth in a single or a few assets. The second assumption of the portfolio theory is that the returns of assets are normally distributed. This means that the mean (the expected value) and variance (or standard deviation) analysis is the foundation of the portfolio decisions. Further, we can extend the portfolio theory to derive a framework for valuing risky assets. This framework is referred to as the capital asset pricing model (CAPM). An alternative model for the valuation of risky assets is the arbitrage pricing theory (APT).

Q8. What is the capital asset pricing model? Explain its assumptions and implications.

A8 The capital asset pricing model (CAPM) is a model that provides a framework to determine the required rate of return on an asset and indicates the relationship between return and risk of the asset. The required rate of return specified by CAPM helps in valuing an asset. One can also compare the expected (estimated) rate of return on an asset with its required rate of return and determine whether the asset is fairly valued.

The most important assumptions are

1. *Market efficiency* The *capital market efficiency* implies that share prices reflect all available information. Also, individual investors are not able to affect the prices of securities. This means that there are large numbers of investors holding small amount of wealth.
2. *Risk aversion and mean-variance optimisation* Investors are risk averse. They evaluate a securityôs return and risk in terms of the expected return and variance or standard deviation respectively. They prefer the highest expected returns for a given level of risk. This implies that investors are mean-variance optimisers and they form efficient portfolios.
3. *Homogeneous expectations* All investors have the same expectations about the expected returns and risks of securities.
4. *Single time period* All investorsô decisions are based on a single time period.
5. *Risk-free rate* All investors can lend and borrow at a risk-free rate of interest. They form portfolios from publicly traded securities like shares and bonds.

CAPM has the following implications:

1. Investors will always combine a risk-free asset with a market portfolio of risky assets. They will invest in risky assets in proportion to their market value.
2. Investors will be compensated only for that risk which they cannot diversify. This is the market-related (systematic) risk. Beta, which is a ratio of the covariance between the asset returns and the market returns divided by the market variance, is the most appropriate measure of an assetôs risk.
3. Investors can expect returns from their investment according to the risk. This implies a linear relationship between the assetôs expected return and its beta.

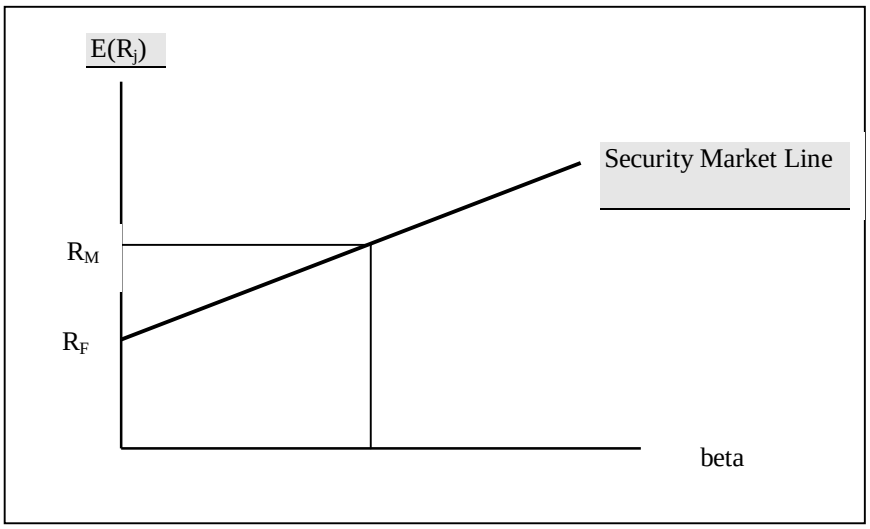
Q9 Explain the security market line (SML) with the help of a figure. How does it differ from the capital market line?

A9 The expected return on a security is given by the following equation**:**

$$E(R_j) = R_f + (R_m - R_f)\beta_j$$

where R_f is the risk-free rate, R_m the market return and the measure of the securityôs systematic risk. This equation gives a line called the *security market line* (SML).

The following figure shows the relationship between return and risk as measured by beta.



The SML depicts individual security risk premium as a function of security risk. The individual security risk is measured by the securityôs beta. Beta reflects the contribution of the security to the portfolio risk.

Q10 What is beta? How is it measured? How do you calculate the expected rate of return of a security?

A10 Beta reflects the systematic risk, which cannot be reduced. Investors can eliminate unsystematic risk when they invest their wealth in a well-diversified market portfolio. A beta of 1.0 indicates average level of risk while more than 1.0 means that the securityôs return fluctuates more than that of the market portfolio. A zero beta means no risk.

Beta is a ratio of the covariance of returns of a security, *j*, and the market portfolio, *m*, to the variance of return of the market portfolio:

$$\beta_j = \frac{Cov_{jm}}{Var_m} = \frac{\sigma_j \sigma_m Cor_{jm}}{\sigma_m^2} = \frac{\sigma_j Cor_{jm}}{\sigma_m}$$

where β_j is beta of the security, σ_j the standard deviation of return of security, σ_m the standard deviation of returns of the market portfolio, σ^2_m the variance of returns of the market portfolio *m* and Cor_{jm} the correlation coefficient between the returns of the security *j* and the market portfolio *m*.

The expected return on a security is given by the following equation:

$$E(R_j) = R_f + (R_m - R_f)\beta_j$$

where R_f is the risk-free rate, R_m the market return and β_j the measure of the securityôs systematic risk.

Q11 Explain the logic of the arbitrage-pricing theory (APT)? How does it compare and contrast with CAPM?

A11 The differences of securitiesô returns may not be fully explained by their betas. The arbitrage pricing theory (APT), resulting from the limitations of CAPM, assumes that many macro-economic factors may affect the risk of a security (or an asset). Thus, APM is a multi-factor model to explain the return of a security. The factors influencing security return may include industrial production, growth in gross domestic product, the interest rate, inflation, default premium, and the real rate of return. Price-to-book-value ratio and size have also been found to explain to the differences in the security returns**.**

The fundamental logic of APT is that investors always indulge in *arbitrage* whenever they find differences in the returns of assets with similar risk characteristics.

Q12 Explain the meaning and significance of the Fama-French three-factor model. How does it differ from CAPM?

A12 The French-Fama is a three-factor model. Three factors determine the portfolio return: (a) Beta, (b) firm size and (c) price-to-book value. CAPM is one-factor model and specifies that the portfolio return depend on bet alone.

CHAPTER 8

CAPITAL BUDGETING DECISIONS

Q1. What is capital budgeting? Why is it significant for a firm?

A1 A capital budgeting decision may be defined as the firmôs decision to invest its current funds most efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years.

Investment decisions require special attention because of the following reasons.

1. They influence the firmôs growth and profitability in the long run
2. They affect the risk of the firm
3. They involve commitment of large amount of funds
4. They are irreversible, or reversible at substantial loss
5. They are among the most difficult decisions to make.

Q2. Despite its weaknesses, the payback period method is popular in practice? What are the reasons for its popularity?

A2 Payback is considered to have the following virtues, which makes it popular in practice.

1. Simplicity. Payback is simple to understand and easy to calculate. The business executives consider the simplicity of method as a virtue. This is evident from their heavy reliance on it for appraising investment proposals in practice.
2. Cost effective. Payback method costs less than most of the sophisticated techniques that require a lot of the analystsô time and the use of computers.
3. Short-term effects. A company can have more favourable short-run effects on earnings per share by setting up a shorter standard payback period. It should, however, be remembered that this may not be a wise long-term policy as the company may have to sacrifice its future growth for current earnings.
4. Risk shield. The risk of the project can be tackled by having a shorter standard payback period as it may ensure guarantee against loss. A company has to invest in many projects where the cash inflows and life expectancies are highly uncertain. Under such circumstances, payback may become important, not so much as a measure of profitability but as a means of establishing an upper bound on the acceptable degree of risk.
5. Liquidity The emphasis in payback is on the early recovery of the investment. Thus, it gives an insight into the liquidity of the project. The funds so released can be put to other uses.

Q3. How do you calculate the accounting rate of return? What are its limitations?

A3 The accounting rate of return (or return on investment, ROI) is the ratio of the average net operating after-tax profit (NOPAT) divided by the average investment. The average investment would be equal to half of the original investment if it were depreciated constantly. Alternatively, it can be found out by dividing the total of the investmentôs book values after depreciation by the life of

the project. Generally, a higher ROI is considered better. For making a decision, a cut-off rate is needed.

As a decision criterion, however, it has serious shortcoming.

1. Cash flows ignored The ARR method uses accounting profits, not cash flows, in appraising the projects. Accounting profits are based on arbitrary assumptions and choices and also include non-cash items. It is, therefore, inappropriate to rely on them for measuring the acceptability of the investment projects.
2. Time value ignored. The averaging of income ignores the time value of money. In fact, this procedure gives more weightage to the distant receipts.
3. Arbitrary cut-off. The firm employing the ARR rule uses an arbitrary cut-off yardstick. Generally, the yardstick is the firmôs current return on its assets (book-value). Because of this, the growth companies earning very high rates on their existing assets may reject profitable projects (i.e., with positive NPVs) and the less profitable companies may accept bad projects (i.e., with negative NPVs).

Q4. Explain the merits and demerits of the time-adjusted methods of evaluating the investment projects.

A4 Merits:

Time value of money: Time-adjusted or discounted cash flow (DCF) techniques recognise the time value of moneyð a rupee received today is worth more than a rupee received tomorrow.

Risk: DCF techniques use the cost of capital as the discount rate, which includes a premium for risk of the project under evaluation.

Measure of true profitability: They use all cash flows occurring over the entire life of the project in calculating its worth. Hence, it is a measure of the projectôs true profitability.

Demerits:

In practice, it is quite difficult to obtain the estimates of cash flows due to uncertainty. It is also difficult in practice to precisely measure the discount rate.

Q5. What is meant by the term time value of money? Which capital budgeting methods take into consideration this concept? How is it possible for the capital budgeting methods that do not consider the time value of money to lead to wrong capital budgeting decisions?

A5 The time value of money is based on the premise that the value of money vhanges because of investment opportunities available to investors. Hence, Rs 100 today is not same as Rs 100 after one year. The capital budgeting methods that are based on the time value of money are called discounted cash flow (DCF) Criteria. They include two methods: (1) Net Present Value (NPV) and (2) Internal Rate of Return (IRR). Profitability Index (PI), a variant of NPV method, also a DCF technique.

Non-DCF techniques are not able to differentiate between cash flows occurring in different time periods. They not focus on value, and hence, they violate the principle of the shareholder wealth maximisation.

Q6. Under what circumstances do the net present value and internal rate of return methods differ? Which method would you prefer and why?

A6 The NPV and IRR methods can give conflicting ranking to mutually exclusive projects. In the case of independent projects ranking is not important since all profitable projects will be accepted. Ranking of projects, however, becomes crucial in the case of mutually exclusive projects. Since the NPV and IRR rules can give conflicting ranking to projects, one cannot remain indifferent as to the choice of the rule. NPV method is consistent with the shareholder wealth maximisation; hence, it should be preferred over IRR method.

Q7. What are the mutually exclusive projects? Explain the conditions when conflicting ranking would be given by the internal rate of return and net present value methods to such projects.

A7 Investment projects are said to be mutually exclusive when only one investment could be accepted and others would have to be excluded. The NPV and IRR methods can give conflicting ranking to mutually exclusive projects under the following conditions:1

1. The cash flow pattern of the projects may differ. That is, the cash flows of one project may increase over time, while those of others may decrease or vice-versa.
2. The cash outlays (initial investments) of the projects may differ.
3. The projects may have different expected lives.

Q8. What is profitability index? Which is a superior ranking criterion, profitability index or the net present value?

A8 Profitability index is the ratio of the present value of cash inflows, at the required rate of return, to the initial cash outflow of the investment. The formula for calculating benefit-cost ratio or profitability index is as follows:

$$PI = \frac{\text{PV of cash inflows}}{\text{Initial cash outlay}} = \frac{PV(C_t)}{C_0} = \sum_{t=1}^{n} \frac{C_t}{(1+k)^t} \div C_0$$

The NPV method and PI yield same accept-or-reject rules, because PI can be greater than one only when the projectôs net present value is positive. In case of marginal projects, NPV will be zero and PI will be equal to one. But a conflict may arise between the two methods if a choice between mutually exclusive projects has to be made The NPV method should be preferred, except under capital rationing. Between two mutually exclusive projects with same NPV, the one with lower initial cost (or higher PI) will be selected

Q9. Under what conditions would the internal rate of return be a reciprocal of the payback period?

A9 The reciprocal of payback will be a close approximation of the internal rate of return if the following two conditions are satisfied:

1. The life of the project is large or at least twice the payback period.
2. The project generates equal annual cash inflows.

Q10. ñThe payback reciprocal has wide applicability as a meaningful approximation of the time adjusted rate of return. But it suffers from certain major limitations.ò Explain.

A10 The payback reciprocal is a useful technique to quickly estimate the true rate of return. But its major limitation is that every investment project dose not satisfies the conditions on which this method is based. When the useful life of the project is not at least twice the payback period, the payback reciprocal will always exceed the rate of return. Similarly, it cannot be used as an approximation of the rate of return if the project yields uneven cash inflows

Q11. Comment on the following statements:

(a) ñWe use payback primarily as a method of coping with risk.ò

The risk of the project under payback is tackled by having a shorter standard payback period. A company has to invest in many projects where the cash inflows and life expectancies are highly uncertain. Under such circumstances, payback may become important, not so much as a measure of profitability but as a means of establishing an upper bound on the acceptable degree of risk It must be realised that payback does not really consider risk of cash flows as it treats cash flows occurring at different time periods as of equal importance and quality.

(b) ñThe virtue of the IRR rule is that it does not require the computation of the required rate of return.ò

The required rate of return does not enter in the computation of IRR. But this information is needed in making the investment decision. The accept-or-reject rule, using the IRR method, is to accept the project if its internal rate of return is higher than the required rate of return or opportunity cost of capital ($r > k$). The project shall be rejected if its internal rate of return is lower than the opportunity cost of capital ($r < k$). The decision maker may remain indifferent if the internal rate of return is equal to the opportunity cost of capital. So even in case of IRR rule we require the computation of the required rate of return.ò

(c) ñThe average accounting rate of return fails to give weight to the later cash flows.ò

The ARR method uses accounting profits, not cash flows, in appraising the projects. Accounting profits are based on arbitrary assumptions and choices and also include non-cash items. It is, therefore, inappropriate to rely on them for measuring the acceptability of the investment projects. The averaging of income ignores the time value of money. In fact, this procedure gives more weightage to the distant receipts.

Q12. ñDiscounted payback ensures that you donôt accept an investment with negative NPV, but it canôt stop you from rejecting projects with a positive NPV.ò Illustrate why this can happen.

A12 The discounted payback period is the number of periods taken in recovering the investment outlay on the present value basis. The discounted payback period still fails to consider the cash flows occurring after the payback period. Thus, it may reject positive NPV projects.

Discounted payback illustrated: Project A involves a cash outlay of Rs 10,000 and its discounted cash flows over its life of five years are: Rs 5,000; Rs 4,000; Rs 1,000; Rs 0 and Rs 0. The discounted payback period is 3 years. Project B also involves a cash outlay of Rs 10,000 and its discounted cash flows over its life of five years are: Rs 5,000; Rs 3,000; Rs 1,000; Rs 1,000 and Rs 5,000. The discounted payback period is 4 years. On the basis of the discounted payback period, Project A will be preferred. However, Project B generates positive NPV.

CHAPTER 9

THE COST OF CAPITAL

Q1. Define cost of capital? Explain its significance in financial decision-making.

A1 The projectôs cost of capital is the minimum required rate of return on funds committed to the project, which depends on the riskiness of its cash flows. The firmôs cost of capital will be the overall, or average, required rate of return on the aggregate of investment projects

It is a concept of vital importance in the financial decision-making. It is useful as a standard for:

1. evaluating investment decisions,
2. designing a firmôs debt policy, and
3. appraising the financial performance of top management

Q2. What are the various concepts of cost of capital? Why should they be distinguished in financial management?

A2 The opportunity cost is the rate of return foregone on the next best alternative investment opportunity of *comparable risk*. Thus, the required rate of return on an investment project is an opportunity cost.

In an all-equity financed firm, the equity capital of ordinary shareholders is the only source to finance investment projects, the firmôs cost of capital is equal to the opportunity cost of equity capital, which will depend only on the business risk of the f*irm*

Viewed from all investorsô point of view, the firmôs cost of capital is the rate of return required by them for supplying capital for financing the firmôs investment projects by purchasing various securities. It may be emphasised that the rate of return required by all investors will be an *overall rate of return - a weighted rate of return.* Thus, the firmôs cost of capital is the óaverageô of the opportunity costs (or required rates of return) of various securities, which have claims on the firmôs assets. This rate reflects both the business (operating) risk and the financial risk resulting from debt capital.

The opportunity cost of capital is given by the following formula:

$$I_0 = \frac{C_1}{(1+k)} + \frac{C_2}{(1+k)^2} + \cdots + \frac{C_n}{(1+k)^n}$$

Where I_0 is the capital supplied by investors in period *0* (it represents a net cash inflow to the firm), C_t are returns expected by investors (they represent cash outflows to the firm) and *k* is the required rate of return or the cost of capital.

Q3. How is the cost of debt computed? How does it differ from the cost of preference capital?

A3 The contractual rate of interest or the coupon rate forms the basis for calculating the cost of debt. The before-tax cost debt:

$$B_0 = \sum_{t=1}^{n} \frac{INT_t}{(1+k_d)^t} + \frac{B_n}{(1+k_d)^n}$$

The following short-cut method can also be used to calculate the before-tax cost of debt:

$$k_d = \frac{INT + \frac{1}{n}(F - B_0)}{\frac{1}{2}(F + B_0)}$$

where INT is interest charges, F is face value, B_0 is current value of debenture/debt, and n is maturity of debt in years.
The before-tax cost of debt, k_d, should be adjusted for the tax effect as follows:

$$\text{After} - \text{tax cost of debt} = k_d(1 - T)$$

Preference shareholders bear more risk than debt-holders. In case of redeemable preference shares, shareholders get dividends and liquidating value on maturity. If the company does not have profits, preference shareholders may not get any dividends. Unlike interest on debt, preference dividend is not tax deductible. The cost of redeemable preference share:

$$P_0 = \sum_{t=1}^{n} \frac{PDIV_t}{(1 + k_p)^t} + \frac{P_n}{(1 + k_p)^n}$$

The cost of preference share is not adjusted for taxes because preference dividend is paid after the corporate taxes have been paid.

Q4. ôThe equity capital is cost free.ô Do you agree? Give reasons.

A4 It is sometimes argued that the equity capital is free of cost. The reason for such argument is that it is not legally binding for firms to pay dividends to ordinary shareholders. Further, unlike the interest rate or preference dividend rate, the equity dividend rate is not fixed. It is fallacious to assume equity capital to be free of cost. Equity capital involves an *opportunity cost.* Ordinary shareholders supply funds to the firm in the expectation of dividends and capital gains commensurate with their risk of investment. The market value of the shares, determined by the demand and supply forces in a well functioning capital market, reflects the return required by ordinary shareholders. Thus, the shareholdersô required rate of return, which equates the present value of the expected benefits with the current market value of the share, is the cost of equity.

Q5. The basic formula to calculate the cost of equity is: $(DIV_1/ P_O) + g$. Explain its rationale.

A5 The cost of equity is equal to the expected dividend yield (DIV_1/P_0) plus capital gain rate as reflected by expected growth in dividends (*g*). It may be noted that formula is based on the following assumptions:

1. The market price of the ordinary share, P_0, is a function of expected dividends.
2. The dividend, DIV_1, is positive (i.e. $DIV_1 > 0$).
3. The dividends grow at a constant growth rate *g*, and the growth rate is equal to the return on equity, ROE, times the retention ratio, *b* (i.e. $g = ROE * b$).
4. The dividend payout ratio [i.e. (1 ï *b*)] is constant.

The cost of equity (internal) determined by the dividend-valuation model implies that if the firm would have distributed earnings to shareholders, they could have invested it in the shares of the firm or in the shares of other firms of similar risk at the current market price (P_0) to earn a rate of return equal to k_e. Thus, the firm should earn a return on retained funds equal to k_e to ensure growth of dividends and share price. If a return less than k_e is earned on retained earnings, the market price of the firmôs share will fall.

Q6. Are retained earnings less expensive than the new issue of ordinary shares? Give your views.

A6 The cost of external equity is greater than the cost of internal equity for one reason. The selling price of the new shares may be less than the market price. In India, the new issues of ordinary shares are generally sold at a price less than the market price prevailing at the time of the announcement of the share issue.

Q7. What is the CAPM approach for calculating the cost of equity? What is the difference between this approach and the constant growth approach? Which one is better? Why?

A7 As per the CAPM, the required rate of return on equity is given by the following relationship:

$$k_e = R_f + (R_m - R_f)\beta_j$$

Equation requires the following three parameters to estimate a firmôs cost of equity:

1. The risk-free rate (R_f):
2. The market risk premium (R_m ï R_f):
3. The beta of the firmôs share (β):

The dividend-growth approach has limited application in practice because of its two assumptions. First, it assumes that the dividend per share will grow at a constant rate, *g*, forever. Second, the expected dividend growth rate, *g,* should be less than the cost of equity, k_e, to arrive at the simple growth formula

These assumptions imply that the dividend-growth approach cannot be applied to those companies, which are not paying any dividends, or whose dividend per share is growing at a rate higher than k_e, or whose dividend policies are highly volatile. The dividendï growth approach also fails to deal with risk directly. In contrast, the CAPM has a wider application although it is based on restrictive assumptions. The only condition for its use is that the companyôs share is quoted on the stock exchange. Also, all variables in the CAPM are market determined and except the company specific share price data, they are common to all companies. The value of beta is determined in an objective manner by using sound statistical methods. One practical problem with the use of beta, however, is that it does not probably remain stable over time.

Q8. ôDebt is the cheapest source of funds.ô Explain.

A8 Debt and equity are the two main sources of funds. Debt is cheap because of two prime reasons:

1. Risk of the lenders is less as compared to equity holders so cost of debt is less,
2. Interest paid on debt is tax deductible.

Q9. How is the weighted average cost of capital calculated? What weights should be used in its calculation?

A9 The following steps are involved for calculating the firmôs WACC:

1. Calculate the cost of specific sources of funds
2. Multiply the cost of each source by its proportion in the capital structure.
3. Add the weighted component costs to get the WACC.

In financial decision-making, the cost of capital should be calculated on an after-tax basis. Therefore, the component costs should be the after-tax costs. If we assume that a firm has only debt and equity in its capital structure, then the WACC (k_0) will be:

$$k_o = k_d(1-T)w_d + k_e w_e$$

$$k_o = k_d(1-T)\frac{D}{D+E} + k_e \frac{E}{D+E}$$

where k_0 is the WACC, k_d (1 ï T) and k_e are, respectively, the after-tax cost of debt and equity, D is the amount of debt and E is the amount of equity. In a general form, the formula for calculating WACC can be written as follows:

$$k_0 = k_1 w_1 + k_2 w_2 + k_3 w_3 + \cdots$$

where k1, k_2, é are component costs and w_1, w_2, é weights of various types of capital employed by the company.

You should always use the *market value weights* to calculate WACC. In practice, firms do use the book value weights. Generally, there will be difference between the book value and market value weights, and therefore, WACC will different. WACC, calculated using the book-value weights, will be understated if the market value of the share is higher than the book value and *vice-versa.*

Q10. Distinguish between the weighted average cost of capital and the marginal cost of capital. Which one should be used in capital budgeting and valuation of the firm? Why?

A10 *Weighted marginal cost of capital* (WMCC): Marginal cost is the new or the incremental cost of new capital (equity and debt) issued by the firm. The weighted average cost of capital is the cost of old and new capital. In capital budgeting decision and valuation, we consider the incremental cash flows. Hence, it appropriate to use the marginal cost of capital as the discount rate.

Q11. ôMarginal cost of capital is nothing but the average cost of capital.ô Explain.

A11 Marginal cost is the new or the incremental cost of new capital (equity and debt) issued by the firm. We assume that new funds are raised at new costs according to the firmôs target capital structure. Hence, what is commonly known as the WACC is in fact the weighted marginal cost of capital (WMCC); that is, the *weighted average cost of new capital given the firm's target capital structure*

Q12. How would you apply the cost of capital concept when projects with different risks are evaluated?

A12 A simple practical approach to incorporate risk differences in projects is to adjust the firmôs WACC (upwards or downwards), and use the *adjusted WACC* to evaluate the investment project:

$$\text{Adjusted WACC} = \text{WACC} \pm \text{Risk - adjustment factor}$$

That is, a projectôs cost of capital is equal to the firmôs weighted average cost of capital plus or minus a risk adjustment factor. The risk adjustment factor would be determined on the basis of the decision makerôs past experience and judgment regarding the projectôs risk. It should be noted that adjusting WACC for risk differences is *not* theoretically a very sound method; however, this approach is better than simply using the firmôs WACC for *all* projects without regard for their risk.

Companies in practice may develop policy guidelines for incorporating the project risk differences. One approach is to divide projects into broad risk classes, and use different discount rates based on the decision makerôs experience. For example, projects may be classified as:

1. Low risk projects
2. Medium risk projects
3. High risk projects.

The risk of a project depends on its operating leverage. So you can estimate a projectôs beta based on its operating leverage. You may also consider the variability of the projectôs earnings to estimate the beta.

CHAPTER 11

COMPLEX INVESTMENT DECISIONS

Q.1 Why should you not compare the simple NPV of the mutually exclusive projects with different lives? What is the correct procedure to compare such projects?

A.1 The NPV of mutually exclusive projects with the same lives can be compared and we can choose the project with highest NPV. However, the simple NPV method fails to indicate correct choice for the difference in the projectsô lives.

The correct method to evaluate mutually exclusive projects with different lives is by evaluating them for equal periods of time. The choice between projects with different lives can be made by comparing their annual equivalent value (AEV). The AEV is the NPV of an investment divided by the annuity factor given its life and discount rate.

Q.2 Show with the help of an illustration that the annual equivalent value and the NPV for infinite period procedures lead to same results in case of the mutually exclusive projects with different lives.

A.2 The choice between projects with different lives should be made by evaluating them for equal periods of time, i.e., Annual Equivalent Value (AEV) method. In AEV method, it is assumed that each machine is replaced in the last year of its life. The replacement chains of the machines can be assumed to extend to the periods of time equal to least common multiple of the lives of the machines.

The same results, i.e., AEV, can be replicated at constant scale indefinitely. It implies that an annuity is paid at the end of every n years starting from the first period.

The AEV for specific period is calculated by using following formulae:

$$\text{AEV} = \frac{\text{NPV}}{\text{Annuity Factor}}$$

The AEV for perpetuities can be calculated by using:

$$NPV_{\infty} = (NPV_{n})\left[\frac{(1+k)^{n}}{(1+k)^{n}-1}\right]$$

Example: Let us assume that, a machine is purchased by paying Rs. 20,000, the expected life is 3 years, and discount rate is 12%. The annual running cost of machine is Rs. 8,000 p.a. In this case NPV of cost at 12% would be Rs. 39,200. Hence,

$$AEV = \frac{39{,}200}{2.402} = Rs.16{,}320$$

If the machine could be assumed to be replaced indefinitely, then NPV of machine would be Rs 16,320/0.12 = Rs 136,000.

Now, if we assume that machine can be replicated at constant scale indefinitely, then

$$NPV = 39{,}200\left[\frac{(1.12)^3}{(1.12)^3 - 1}\right] = Rs.136{,}000$$

Q.3 How does the NPV rule help in determining the optimum duration of an investment? Illustrate your answer.

A.3 On account of capital constraint, some projects can be postponed by one or two periods. The simple rule to decide about optimum timing of an investment project is that point of time when it maximizes the NPV. The optimum investment (duration) timing analysis is of direct relevance in the case of tree harvesting type problems. Suppose that we own a piece of land and are considering growing a crop of trees, we would like to maximise the NPV of investment. The maximisation of the investmentôs NPV would depend on when we harvest trees. The net future value of trees increases when harvesting is postponed; but the opportunity cost of capital is incurred by not realising the value by harvesting the trees. The NPV will be maximised when the trees are harvested at the point where the percentage increase in value equals the opportunity cost of capital.

Suppose the net future value obtained over the years from harvesting the trees is A_t and if the opportunity cost of capital is *k*, then the present value (PV) of the net realisable value of trees is given by:

$$\text{PV} = \frac{A_t}{(1+k)^t} = A_t(1+k)^{-t}$$

If we assume continuous compounding, the PV will be equal to:

$$\text{PV} = \text{A}_\text{t}\text{e}^{-\text{kt}}$$

Assume that A_t is given by the function:

$$\text{A}_\text{t} = 3{,}000(1+\text{t})^{1/2}$$

and *k* is equal to 10 percent. Table 1 below gives the details.

Table 1 Net Future Value Etc

Time	*Net Future Value* A_t	*Increase in Value* ΔA_t	*Rate of Increase in Value* $\Delta A_t / A_t$	*PVF*	*Present Value* $A_t \times e^{-kt}$
t	Rs	Rs	Rs	eï kt	Rs
1	4,243	ï	ï	0.9048	3,839
2	5,196	953	0.225	0.8187	4,254
3	6,000	804	0.155	0.7408	4,445
4	6,708	708	0.118	0.6703	4,497
5	7,348	640	0.095	0.6065	4,457
6	7,937	589	0.080	0.5488	4,356

The present value is maximum when the trees are harvested in period 4. It is noticeable that after 4 years, the rate of increase in the value of trees declines below the opportunity cost of capital of 10 percent.

We may have to incur initial cost of planting the trees. Assume that the initial cost, C, is Rs 4,000. The NPV will be:

$$NPV = A_t e^{-kt} - C = 3{,}000(1+4)^{1/2}(0.6703) - 4{,}000 = 4{,}497 - 4{,}000 = \text{Rs } 497$$

The NPV is highest (+ Rs 497) when the trees are harvested in 4 years.

Q.4 What are the important considerations in a replacement decision? How would you decide when to replace equipment?

A.4 Replacement decisions should be governed by the economic and necessity considerations. An equipment or asset should be replaced whenever a more economic alternative is available on account of technological improvement and reduces high operating costs.

The company should make an analysis whenever an alternative is available by comparing the Annual Equivalent Value (AEV) of the old and new asset. The asset is to be replaced at a point of time when AEV of new machine/asset is more than AEV of old machine/asset.

Q.5 Define capital rationing. How would you select the investment projects under one-period capital constraint? Would capital rationing lead to sub-optimal investment decision?

A.5 Capital rationing refers to a situation where the firm is constrained for external or self-imposed reasons to obtain necessary funds to invest in all investment projects with positive NPV. Here, management has to decide to obtain that combination of the profitable projects which yields highest NPV within the available funds.

Under the one-period constraint situation, the firm should select the portfolio of projects which yields highest NPV per rupee of capital invested rather than to maximize NPV in absolute term. Projects should be ranked by their profitability index, and top-ranked projects should be undertaken until funds are exhausted.

The capital rationing leads to sub-optimal decision in case of multi period capital constraints and project indivisibility. Number of times, it may be advisable to accept many lower ranked smaller projects than a single large project. The acceptance of a single large project, which may be top-ranked, excludes the possibility of accepting small projects which may have higher total NPV.

Q.6 A finance director of a multi-crore engineering company once stated ñWe do not face any capital rationing problem. The capital market is big enough to supply us funds in various ways to finance any profitable project. We do, however, impose budget ceiling on the capital expenditures of divisions for control purposes. But that does not imply shortage of funds and therefore, non-acceptance of genuinely profitable projects.ò What is the finance director talking about?

A.6 Finance director is saying that they do not face any sort of External Capital Rationing. Capital market is big and they get funds in various ways to finance any profitable project. But they do impose ceilings on the capital expenditures of divisions as a means of financial control. In a divisional set up, the divisional manager may overstate their investment requirement. One way of forcing them to carefully assess their investment opportunities and set priorities is to put upper limit to their capital expenditures. They resort to Internal Capital Rationing for ensuring effective utilization of funds. In terms of impact, internal capital rationing may also amount to rejecting positive NPV projects.

Q.7 Explain the limitations of the NPV and PI rules in selecting investment projects under capital rationing.

A.7 Under the capital rationing, firm should accept all investment projects with positive NPV in order to maximize the wealth of shareholders. The NPV rule will not work in the following circumstances:

1. The owner-manager do not approve the idea of the public issue of shares because of the fear of losing control of the business; or
2. The prospective investors are not convinced of the prospects of the projects; or
3. The cut-off or minimum rate of return required by investor may be higher than the internal rate of return of the project.

According to the PI rule those projects should be selected that give the highest ratio of present value to initial outlay. The PI rule will not work in the following circumstances.

1. PI rule cannot be used in multi-period constraints. In some of the projects investment can be made in year 0 and same may require investment later on. Some projects may require the investment in piece-meal way, i.e., in phased manner. In such circumstances, ranking of projects is quite difficult.
2. PI rule cannot be applied thoroughly on account of project indivisibility. The acceptance of single large project excludes the possibility of accepting small projects which may have higher total NPV. So objective of diversification of risks cannot be achieved by considering mutually exclusive projects or dependent projects.

Q.8 How does mathematical programming help in the optimum choice of projects under capital rationing? Why is not programming approach popular in practice?

A.8 The limitations of PI method in case of multi-period constraints supported development and use of mathematical models like linear programming and integer programming. The linear programming equations can be framed by deciding objective functions, and also the constraints. Then the linear programming equations can be solved with the help of computer or by using simplex method. The LP solutions require us to accept a fraction of project. If the project is indivisible, then we use integer programming by limiting the project either by 0 and 1. Integer programs are quite difficult to solve.

The programming approach is not popular on account of following two reasons:

1. They are costly to use, when indivisible projects are involved, and
2. These models assume that future investment opportunities are known, which is practically not possible.

CHAPTER 20

LONG TERM FINANCE: SHARES, DEBENTURES AND TERM LOANS

Q.1 What is an ordinary share? How does it differ from a preference share and debenture? Explain its most important features.

A.1 Ordinary shares (called common stocks in USA) are important securities used by the firms to raise funds to finance their activities. Ordinary shares provide ownership rights to ordinary shareholders. They are legal owners of the company. As a result, they have residual claims on income and assets of the company. They have the right to elect directors and maintain their proportionate ownership in the company, i.e., preemptive right.

Preference shares and debentures are also important securities used by firm to raise funds to finance their activities. Preference shareholders are also legal owners of the company, but they have the claim over assets of the firm before the claim of equity shares settled. They also have the right to have fixed dividend if company decides to pay, before on equity shares.

Debentures are basically long term promissory note for raising loan capital. The firm promises to pay interest and principal as stipulated. Debenture holdersô are creditors of the firm, not the owner of the firm. The interest rate is fixed and known; maturity date is also fixed and known in advance, the terms of redemption are fixed at the time of issue of debentures. Debentures may be secured or unsecured, while the equity shares are unsecured.

Q.2 What are the advantages and disadvantages of ordinary shares to the company? What are the merits and demerits of the shareholdersô residual claim on income from the investorsôpoint of view?

A.2 Ordinary shares represent the ownership position in a company. The shareholders are legal owners of the company. Ordinary shares are also known as variable income securities (the rate of dividend is not fixed and not committed). It is a source of permanent capital.

Advantages of ordinary shares are as follows:

1. It is a permanent capital, as they do not have maturity date.
2. It increases the base of the firm, and thus increases its borrowing limits.
3. A company is not legally bound to pay dividend. When the profits are insufficient or firm have need of funds for investment in profitable opportunities, it can reduce or suspend payment of dividend.

Limitations of ordinary shares are as follows:

1. The control of the corporate is affected by the issuance of equity shares.
2. The exclusive use of ordinary shares as a medium of capital eliminates the advantages likely to accrue from the policy of trading on equity.
3. Individual and institutional investor cannot purchase equity shares because of choice or legal restrictions.
4. The excessive use of equity shares may result in over capitalization in future when the earning capacity of the firm fails to raise up to the desired level of equity providers.

5. Ordinary shares are riskier from investorsô point of view as there is uncertainty regarding dividend and capital gains.

The ordinary shareholders have a claim to the residual income; i.e., earnings available for equity shareholders after satisfying all providers of funds. This income may be split into two parts, i.e., dividends and retained earnings. Residual income is either directly distributed in the form of dividend or indirectly in the form of capital gains (retained earnings reinvested, enhance the earnings of the firm in future). Dividends are payable based on discretion of companyôs board of directors. Thus, ordinary share is a risky security from the investorsô point of view.

Q.3 What is the significance of voting rights to the ordinary shareholders? What is a proxy? Why do proxy fights occur?

A.3 Ordinary shareholders are required to vote on a number of important matters, viz., election of directors, change in memorandum of association, etc. Each ordinary share carries one right. Thus, an ordinary shareholder has votes equal to the number of shares held by him. They may vote in person or by proxy.

A proxy is a designated person having a right to vote on behalf of shareholder at the companyôs annual general meeting. When management takeover is threatened or some important decisions are to be taken, proxy fights ï battle between rival groups for proxy votes-occur. They particular group put all efforts to collect proxy-votes.

Q.4 What is a right issue? What are its advantages and disadvantages from the companyôs and shareholderôs point of view?

A.4 A right issue involves selling of ordinary shares to the existing shareholders of the company. The law in India requires that the new ordinary shares must be first issued to the existing shareholdersôon a pro-rata basis.

The advantages of right issue are as follows:

1. The existing shareholders control is maintained through the pro-rata issue of shares.
2. Raising of funds through right issue involves less flotation costs as company can avoid underwriting commission and issue and promotional expenses.
3. In case of profitable and growing company, the issue is more likely to be successful as the subscription price is set below than current market price.

The limitations or disadvantages are:

1. The wealth of shareholders decline if they fail to exercise their voting rights.
2. Those companies whose shareholding is concentrated in the hands of financial institutions because of the conversion of loan into equity would prefer public issue of shares rather than the right issues.

Q.5 Since the right issue allows the ordinary shareholdersôto purchase the shares at a price much lower than the current market prices, why does not shareholdersô wealth increase? Illustrate your answer.

A.5 When the rights are offered for raising funds, three issues are involved: (1) the number of rights needed to buy new shares, (2) the theoretical value of right, and (3) the effect of rights offerings on the value of the ordinary shares outstanding.

From the following illustration, it may be clear that value of a right when the share is selling ex-rights or cum-rights, the existing shareholder does not benefit or lose from right issue. His wealth remains unaffected when he exercises his rights.

For example, Mr. X an investor owns 3 shares of Sunshine Co. Ltd. Current market price is Rs. 130, so his total wealth is Rs. 390 (Rs. 130 × 3). The Sunshine Co. has decided to issue rights for raising funds. The subscription price (issue price) has been fixed at Rs. 75. The issue ratio has been fixed at 1:3. Hence, Mr. X is entitled for one right share. Assume that Mr. X exercises his rights. The ex-rights price is Rs. 116.25, as calculated below.

$$\text{Price of share after right issue (Ex-rights price)} = \frac{(S_o \times P_o) + (S \times P_s)}{S_o + S}$$

Where S_o is existing shares; P_o is current market price; S is new shares and P_s is subscription price.

$$= \frac{(3 \times 130) + (1 \times 75)}{3+1} = \text{Rs. } 116.25$$

Therefore, his total wealth is Rs. 465 (116.25 x 4). But, he has spent Rs. 75 to obtain additional shares. So his net wealth is Rs. 390 (Rs. 465 - Rs 75).

Q.6 What is a debenture? Explain the features of a debenture.

A.6 A debenture is a long term promissory note for raising loan capital. The purchaser of debenture is called debenture holder. Debenture holder is the creditor of the firm.

The important features of debentures are enumerated as under:

a. It is a long term, fixed income financial security.
b. The contractual rate of interest is fixed and known. It indicates the percentage of par value of the debentures that will be paid, non-cumulatively ï annually, semi-annually or quarterly; cumulatively ï along with principal on maturity.
c. Debentures are issued for a specific period of time, and on maturity date redeemed by company.
d. Debenture issues may include buy-back provision. Buy-back provisions enable the company to redeem debentures at specified price before maturity date.
e. Debentures are either secured (by alien on companyôs specific assets) or unsecured.
f. The yield on a debenture is related to its market price; therefore, it could be different from the coupon rate of interest. Hence,

$$\text{Yield} = \frac{\text{Annual Interest}}{\text{Market Price}}$$

g. An indenture or debenture trust deed is a legal agreement between the company issuing debentures and the debenture trustee who represents the debenture holders.

Q.7 What are the pros and cons of debentures from the companyôs and investorsô point of views?

A.7 Debenture has a number of advantages as long term sources of finance:

1) It involves less cost to the firm than the equity finance because investors expect lower rate of return, and interest payments are tax-deductible.
2) Debenture issue does not cause dilution of ownership control by companyôs present management.
3) There is a certainty of finance for specified period.
4) By issuing debentures company gets an opportunity to trading on equity.
5) The debentures may be issued out of necessity. In such a situation, it may be compelled to mortgage assets to raise funds.
6) During the periods of inflation, debenture issue benefits the company. Its obligation of paying interest and principal which are fixed decline in real terms.

Debentures have some limitations like.

1) A company with highly fluctuating earnings takes a great risk by issuing debentures which may entail a great strain on its resources, and company may face the consequences of liquidation.
2) It increases the financial leverage, which may be disadvantageous for firms which have fluctuating sales and earnings.
3) Debentures must be paid on maturity, so it involves substantial cash outflows at some point.
4) Debenture indenture may contain restrictive covenants which may limit the companyôs operating flexibility in future.

Q.8 Why a preference share is called a hybrid security? Do you agree that it combines the worst features of ordinary shares and bonds?

A.8 Preference shares are hybrid securities as they include some features of both an ordinary share and a debenture. Most preference shares in India have a cumulative feature, requiring that all past outstanding preference dividends be paid before any dividend to ordinary shareholders is announced. In principle, preference shares could be redeemable, i.e., with a maturity date, or irredeemable, i.e., perpetual, without maturity date. Like debentures, a firm can issue convertible (into equity shares) or non-convertible preference shares.

Preference shares provide risk less leverage advantage to the equity shareholders since preference dividend is a fixed obligation. The preference dividend is not tax deductible. Preference shares provide more flexibility and fewer burdens to the company.

Q.9 Explain the advantages and disadvantages of preference shares to the company.

A.9 The advantages of preference shares to the company are as follows:

1) It provides financial leverage advantage since preference dividend is a fixed and non-committed obligation. The non-payment of preference dividend does not threaten the life of the company.
2) It provides some financial flexibility to the company since company can postpone dividend payment.

3) The preference dividend payments are restricted to the stated amount. The preference shareholdersô do not participate in excess profits of the company.
4) Preference shareholders do not have any voting rights except in case dividend arrears exist.

The following are the limitations of preference shares:

1) The preference dividend is no tax-admissible expenses as do interest on debenture. So, it is costlier than debentures.
2) Although preference dividend can be omitted, they may have to be paid because of their cumulative nature. Non-payments of preference dividend adversely affect the image of the company. Thus, in future, it is quite difficult for the company to raise funds.

Q.10 What are term loans? What are their features?

A.10 Term loans are loans for more than a year maturity. Generally, in India, they are available for a period of 6 to 10 years. In some cases, the maturity could be as long as 25 years. Interest on term loans is tax-deductible. Mostly, term loans are secured through an equitable mortgage on immovable assets. Term loans secured specifically by the assets acquired using the term loan funds, is called primary security. Term loans are also generally secured by the companyôs current and future assets. This is called secondary or collateral security. In addition to asset security, lender like financial institutions (FIs), add a number of restrictive covenants (asset related, liability related, cash flow related and/or control related) to protect itself further. FIs in India are normally insisting on the option of converting loans into equity, and specify the repayment schedule at the time of entering into loan agreement (in principle) with borrower.

Q.11 How does a term loan differ from a non-convertible debenture?

A.11 Non-convertible debentures (NCDs) are pure debenture (a long term promissory note) without a feature of conversion. They are repayable on maturity. The investor is entitled for interest and repayment of principal. Term loans are also long term debt with a maturity of more than one year.

The term loans are obtained from banks and specially created financial institutions (FIs) in India by private placement rather than public subscription as is the case with NCDs. The purpose of term loans and NCDs are generally to finance the companyôs capital expenditure. Sometimes, NCDs can be issued to finance mid-term working capital needs also.

In the case of term loans, firms directly negotiate with FIs for terms, while in case of NCDs, the terms are decided by firms on their own by considering general economical environment. The term loans and NCDs both can be secured by way of mortgage on assets of the company. Term loans can be converted into equity shares, while NCDs cannot be convertible into equity shares of preference shares.

Q.12 What is common between term loans and debentures in India? Explain the comparative merits and demerits of both.

A.12 The term loans and debentures both represent long term debt with a maturity more than one year. Both have contractual rate of interest. Term loans are always secured by way of mortgage on assets of the firm, while the debentures may be

secured or unsecured. The interest expenses are tax-deductible expense. Both provide the benefit of trading on equity to the shareholders.

Debenture holders do not have voting rights; therefore; debenture issue does not cause dilution of ownership. Term loans directly do not cause dilution of ownership, but they impose some restrictive covenants on working of the firm, so the decision making freedom of board of directors reduces to that extent. Debenture and term loan both result in legal obligation of payment of interest and principal; if not paid, the lenders can force the company into liquidation. Both increase the financial leverage, which may particularly be disadvantageous to those firms which have fluctuating sales and earnings.

CHAPTER 21

CONVERTIBLE DEBENTURES AND WARRANTS

Q.1 Define the following terms: (a) conversion price, (b) conversion value, and (c) conversion premium.

A.1 A convertible debenture is a debenture that can be changed into a specified number of ordinary shares at the option of the owner. It is also called hybrid security.

The conversion price is the price paid for ordinary share at the time of conversion. The conversion ratio is the number of ordinary shares that an investor can receive when he/she exchanges his convertible debenture. The conversion value of a convertible debenture is equal to the conversion ratio multiplied by the ordinary shares market price. The difference between the convertible debentureôs market value and higher of the conversion or NCD value (i.e., investment value of non-convertible debenture) is called the conversion premium.

Q.2 What are the important features of a convertible security? What reasons are generally given for issuing convertible securities?

A.2 Convertible security is either a debenture or a preference share that can be exchanged for a stated number of ordinary shares at the option of the investor. The most notable feature of convertible security is that it promises a fixed income associated with security as well as chance of capital gains associated with equity shares after the owner has exercised his conversion option.

Companies offer convertible securities to sweeten debt and thereby make it attractive. It is a form of deferred equity financing, and provides low cost funds during the early stage of investment project. Investors generally prefer fixed interest convertible securities to earn a definite, fixed income with the chance of making capital gains. The convertible securities avoid immediate dilution of the earnings for share.

Q.3 Convertible debentures generally carry lower rates of interest than the non-convertible debentures. If this is true, does it mean that the cost of capital on convertible debentures is lower than on non-convertibles? Why or why not?

A.3 Yes, the cost of capital on convertible debenture is lower on non convertible debentures. The company offers lower rate on convertibles because of the value of the conversion feature as compared to non-convertibles. Investors generally prefer fixed income convertibles. After the project is complete and the companyôs earnings rise, the share is likely to increase. With an in-built option to convert, the investor are likely to make capital gains This chance of making capital gains, tempts investors to accept lower rate of interest today.

Q.4 How is a convertible security valued? Explain your answer with the help of a graph.

A.4 The convertible security are traded (bought and sold) in the stock market until they are converted into equity shares. The price at which the convertible security

sells is called its market value. A convertible security market value depends on both investment and the conversion value. The difference between the convertible debentureôs market value and the higher of the conversion or the NCD value (investment value) is called conversion premium.

$$\text{Conversion premium} = \frac{\text{Market Value} - \text{Conversion or Investment value}}{\text{Conversion or Investment Value}}$$

(Refer to Figure 21.1 from the text book here.)

Above graph shows relationship between the convertible debentureôs market, investment and conversion value and ordinary share price. The conversion value, on the other hand, is related to the ordinary share price. It increases as the ordinary share price increases. Typically, the market value is higher than both the investment and conversion value. The difference between investment and conversion value lines is known as conversion premium.

Q.5 What is a warrant? What are its characteristic features? Why are warrants issued?

A.5 A warrant is an option to buy a specified number of ordinary shares at an indicated price during a specified period. Warrants are used by large, profitable companies as a part of a major financing package. Warrants may also be used in conjunction with ordinary or preference shares. The purpose is to improve the marketability of issue.

Warrants have a number of features; few of them are explained hereunder.

1) The exercise price of a warrant is the price at which its holder can purchase the issuing firmôs ordinary shares.
2) Exercise ratio states the number of ordinary shares that can be purchased at the exercise price per warrant.
3) The expiration date is the date when the option to buy ordinary shares in exchange for warrantsôexpires.
4) A warrant can be either detachable (sold separately from the security to which it was originally attached) non-detachable (cannot be sold separately).
5) Warrants entitle to purchase ordinary shares.

Generally, following are the reasons for issuing warrants.

1) Warrants help to make the issue of equity and debentures attractive.
2) Warrants are used to ósweetenôthe debenture issue by giving the investors an opportunity to participate in capital gains when the share price appreciates.

3) Warrants also provide a company an opportunity for deferred equity financing. The company sells its ordinary shares in future at a premium by setting exercise price higher than the prevailing share price.
4) The company to some extent is sure to obtain cash inflows in future when investors exercise their warrants.

Q.6 Explain the difference between a convertible security and a warrant.

A.6 A convertible security and a warrant are used by large, profitable companies as a part of a major financing package.

In the case of a convertible security and a warrant, the conversion price/exercise price, conversion ratio/exercise ratio and conversion date/expiration date is decided at the time of issue, to make issue more attractive.

A convertible security is converted into equity shares on conversion date, and no cash inflows for the company occurs at that time.

In the case of warrant, the buyer, i.e., investor has an option to exercise his right for equity or preference shares holding, and company have cash inflows on that date.

Both a convertible security and a warrant can be used as deferred equity financing tool, and they help in the beginning of the project, to avail the benefits of trading on equity.

Q.7 Explain the valuation of warrants with the help of a graph.

A.7 A warrant is an option to buy a stated number of companyôs ordinary shares t a given price on or before a specified maturity date.

The theoretical value of a warrant can be found out by knowing the ordinary shareôs market price, and warrants exercise price and exercise ratio.

Warrantsô theoretical value = (Share price ï Exercise price) × Exercise ratio

If the share price is less than the exercise price, then the warrantôs theoretical value will be negative.

The difference between the warrantôs market value and its theoretical value is called the premium.

$$\text{Premium} = \frac{\text{Warrantôs market value - Warrantôs theoretical value}}{\text{Warrantôs theoretical value}}$$

(Refer to Figure 21.2 from the text book here.)

Q.8 What is meant by zero-interest debentures and deep-discount debentures? How is their cost determined? Illustrate your answer.

A.8 Zero-interest debentures (ZID) or Zero-coupon bonds do not carry an explicit rate of interest. The difference between the face value of the bond and its purchase price is the return of the investor. For example, a company may issue a ZID of face value Rs. 100 for Rs. 52 today for a period of 5 years. Then, the rate of interest is 13%, calculated as under:

$FV = PV\ (1+i)^n$

$100 = 52\ (1+i)^5$

By trial and error method, i = 13%.

Deep Discount bond or Deep-Discount debentures or zero-interest bond (DDB) are issued at a price much lower than the face value. Thus, there is an implicit rate of interest. For example, a bond issued at a price of Rs. 12,750 to be redeemed after 30 years at its face value of Rs. 500,000. The implied annual rate of interest is 13%, calculated as under:

$FV = PV\ (1+i)^n$

$5,\ 00,000 = 12,750\ (1+i)^{30}$

By trial and error method, i = 13%.

CHAPTER 25

FINANCIAL STATEMENTS ANALYSIS

Q-1 Explain the need for financial analysis. How does the use of ratios help in financial analysis?

A-1 Financial analysis is the process of identifying the financial strength and weaknesses of the firm by properly establishing relationships between the items of Balance Sheet and Profit and Loss a/c. The financial analysis helps the trade creditorsô to determine the firmôs ability to meet their claimôs within short period, helps the long-term fund providers to judge the long-term solvency, to investors to determine the firmôs ability to meet its earnings ability and risk, and to management for efficient and effective resource utilization.

A financial ratio is a relationship between two financial variables. The financial ratios help the usersô to determine

a) The ability of the firm to meet its current obligations;
b) The extent to which the firm has used its long-term solvency by borrowing funds;
c) The efficiency with which the firm is utilizing its assets in generating sale revenue, and
d) The over all operating efficiency and performance of the firm.

Q-2 What do you mean by the liquidity of a firm? How can the liquidity of a firm be assessed?

A-2 Liquidity means the firmôs ability to meet its current obligations. A proper management of liquidity ensures that firm does not suffer from lack of liquidity, and also does not have excess liquidity. Liquidity ratios provide quick measure of liquidity. The liquidity can be assessed by using current ratio and quick ratio. The other ratios like cash ratio, interval measure ratio and working capital ratio can also be used.

Q-3 Is it possible for a firm to have a high current ratio and still find difficulties in paying its current debt? Explain with illustration.

A-3 The current ratio ï current assets divided by current liabilities - is a measure of the firmôs short-term solvency. The current ratio is a test of quantity, not quality. The current liabilities are not subject to any fall in the value, while the current assets can decline in value. The decline in value of current assets possible if the current asset consists of doubtful and slow paying debtors or slow-moving or/and obsolete stock of goods. Thus, a firm will high slow-paying debtors and high slow-moving inventory will have high current ratio, but will find it difficult to service current liabilities.

Q-4 What are the leverage or capital structure ratios? Explain the significance and limitations of the debt-equity ratio as a measure of the firmôs solvency?

A-4 Leverage or capital stricture ratios describe relationship between debt and equity, and help to judge the financial position of the firm. These ratios measure the proportion of outsider capital in financing the firmôs assets, and are calculated by establishing relationships between borrowed capital and equity capital. As a firm increases the proportion of debt, it is exposed to high degree of financial risk. Leverage ratios are calculated to measure the financial risk and the firmôs ability of using debt to shareholders advantage.

To know the proportion of interest bearing debt (also called funded debt) in the capital structure, debt ratios are used. The debt-equity ratio is calculated by dividing total debt by net worth. A high ratio means that the claims of creditors are greater than those of owners. From the point of view of creditors, it represents high risk. It is an unsatisfactory situation from the firmôs point of view as well since a high proportion of debt provides inflexibility to the firmôs operations and causes payment of high interest charge. During the periods of low profits, the debt servicing will prove to be quite burdensome to the firm.

From the shareholdersô viewpoint, the higher the debt-equity ratio, the larger the shareholdersô earnings, when the cost of debt is less than the firm is overall rate of return on investment. But

under adverse conditions, debt erodes their return and in extreme situations may threaten the solvency of the firm.

Q-5 Why are the activity ratios calculated? Do calculations of current asset turnover ratios indicate their quality? Explain

A-5 Activity ratios are calculated to measure the firmôs efficiency in utilizing its assets in generating sales, and are calculated by establishing relationships between sales and assets. They indicate the speed with which assets are being converted or turned over into sales. The current assets turnover ratios relate the current asset to sales. It indicates the quality of current assets, by comparing one period ratio with past and projected ratios. It indicates the utilization of current assets efficiently to maximize sales.

Q-6 How would you calculate the fixed assets turnover and the capital employed turnover ratios? What do they imply?

A-6 If the firm would like to know the efficiency of utilizing the fixed assets, they use the fixed turnover ratio, which is, Fixed Turnover ratio = Sales / Net Fixed Assets

To have the meaningful comparison of firmôs performance over period or with other firms, the Gross Fixed Assets may be used instead of Net Fixed Assets in denominator of ratio.

To know the overall efficiency of the firm in utilizing the fixed assets and net current assets in combination together, the capital employed turnover ratio may be used: Capital Employed Turnover Ratio = Sales / Capital Employed

The capital employed is the sum total of net fixed assets and net working capital, i.e., current assets less current liabilities.

The fixed assets turnover ratio and capital employed turnover ratio indicate the value of sale for one rupee investment in fixed assets and capital employed (fixed assets and net current assets together) respectively.

Q-7 Why is it necessary to calculate the profitability ratios in relation to sales? Illustrate your answer.

A-7 A firm should earn profits to survive and grow over a long period of time. The profit is the difference between revenues and expenses over a period of time. The profitability ratios are calculated to measure the operating efficiency of the firm in terms of profit.

The profitability ratios are to be calculated in relation to sales, because the profit is the ultimate output of the commercial operations of the business. If the firmôs profit has to be examined from the view point of all investors (i.e., lenders and owners), the appropriate measure is operating profit, i.e., earnings before interest and tax.

Following are the profitability ratios in relation to sales.

i. Gross Profit Margin
GPM = (Sales-Cost of Goods Sold) / Sales

ii. Net Profit Margin
NPM = Profit after tax / Sales

iii. Modified Net Profit Margin
MNPM = [EBIT (1-T)] / Sales

Gross Profit margin indicates the managementôsô efficiency in manufacturing of the products. Net profit margin indicates the managementôsô efficiency in manufacturing, selling, administrating the products, and also the efficiency in utilizing the resources. This ratio is affected by the firmôs financing policy. Modified net profit margin ratio is appropriate for a true comparison of the operating performance of firms by ignoring the interest effect (arising from different capital structures).

Q-8 Explain the calculation and significance of the various measures of rate of return on investment.

A-8 Rate of return on investment (ROI) is used to measure the overall operating efficiency of the firm in managing its investments. The term investment refers to the net asset (net fixed assets plus net current assets) or total asset or net worth plus total debt.

The traditional way to measure the ROI is to divide the profit after tax (PAT) by investment. The PAT refers to the residual income of shareholders, and investment refers to the funds supplied by both lenders and shareholders. So, this methodology seems to be inappropriate. It is, therefore, more appropriate to use any of the following measures to compare and evaluate the operating efficiency.

ROI = ROTA = {EBIT (1-T)} / Total Assets

ROI = RONA = {EBIT (1-T)} / Net Assets

RONA is also known as ROCE.

Q-9 Explain the ratios which you, as an analyst, will focus your attention to in the following cases:

(a) A bank is approached by a company for a loan of Rs 50 lakh for working capital purpose.

(b) A company requests a financial institution to grant a 10 year loan of Rs 5 crore.

A-9 (a) It is extremely essential for a firm to be able to meet its current obligations as they become due. For this purpose, the liquidity ratio will be used to measure the ability of the firm to meet its current obligations. The ratios like current ratio, quick ratio, cash ratio, interval measure and net working capital ratio will be used to measure the liquidity of the firm.

Also, it would be essential to measure the firmôs current debt-paying ability. This is going to be measured by debt ratio, debt-equity ratio, fixed charge coverage ratio, etc.

(b) To grant the long-term loan, it is important to assess the firmôs financial risk and its long-term profitability. Financial risk is assessed by calculating financial leverage or capital structure ratios. These ratios indicate mix of funds provided by owners and lenders. These ratios are calculated from the Balance Sheet items to determine the proportion of debt in total financing. The ratios are: (i) debt as a proportion of capital employed, (ii) debt as a proportion of net assets, (iii) debt as a proportion of net worth, (iv) total loan to total assets ratio.

It is also important to measure the first ability to meet interest and other fixed charges obligations. For this purpose, interest coverage ratio and fixed charge coverage ratio will be calculated.

Q-10 Which of the financial ratios of a company would you most likely refer to in each of the following situations? Give reasons.

(i) The company asks you to sell material on credit.

(ii) You are thinking of investing RS. 25,000 in the companyôs debentures.

(iii) You are thinking of investing RS. 25,000 in the companyôs shares.

A-10 (i) Current Ratio, Quick Ratio, Cash Ratio, Average Payment Period and Working Capital Turnover Ratio.

(ii) Total debt to Capital Employed Ratio, Interest Coverage Ratio, Fixed-charge Coverage Ratio and Total Loan to Total Assets Ratio.

(iii) Return on Equity, Earning per shares, Dividend Pay-out Ratio, Dividend Yield, Earning Yield, Price Earning Ratio and also Market Value to Book Value Ratio.

Q-11 What is the firmôs earning power? How are the net profit margin and the assets-turnover related?

A-11 The firmôs earning power depends on the firmôs operating performance. Basically, the ROCE or RONA indicates the firmôs operating performance. It is always the product of the asset turnover, gross profit and operating leverage. The operating leverage is the relationship between EBIT and gross profit (GP).

The RONA is calculated as under:

RONA = EBIT / NA

RONA = Assets turnover ratio x gross margin x operating leverage

= (sales / NA) × (GP/ sales) × (EBIT / GP)

Q-12 What is a Dupont analysis? Explain with the help of a chart.

A-12 DuPont analysis traces the reasons for return on equity (ROE). Is it due to operating performance? How much is contributed by financial leverage? The Dupont analysis chart is shown in the text book.

$$ROE = RONA \times DOL \times DFL$$

$$\frac{PAT}{NW} = \frac{EBIT}{NA} \times \frac{PAT}{EBIT} \times \frac{NA}{NW}$$

$$RONA = \frac{Sales}{NA} \times \frac{EBIT}{Sales}$$

Q-13 ñA higher rate of return on capital employed implies that the firm is managed efficiently.ô Is this true in every situation? What or why not?

A-13 The return on capital employed (ROCE) is equivalent to return on net assets. Net assets equal to net fixed assets plus current assets less current liabilities. The ROCE indicates the firmôs earning power. ROCE is also the product of the asset turnover, gross profit margin and operating leverage. The operating leverage is the relationship between EBIT to net profit. The operating leverage refers to the use of fixed costs in the operation of a firm. In other words, it indicates the operating efficiency. So, it is true to say that higher ROCE indicates that firm is managed efficiently. However, there may be situations where the operating efficiency is average but ROE is high because of the financial leverage.

Q-14 Ratios are generally calculated from historical data. Of what use are they in assessing the firmôs future financial condition?

A-14 Time series or trend analysis of ratios indicates the direction of change. By studying the trends of sales and net profit, investors can restore the confidence in firmôs steady growth in earnings.

The suppliers of long-term debt are also interested in the evaluation of long-term solvency and survival. So, they want to analysis the firmôs profitability and its ability to pay interest and repay principal. For this purpose, they place more emphasis on firmôs projected or pro forma financial statement than those are based on historical data.

Investors and long-term suppliers of debt concentrate on the analysis of firmôs present and future profitability to evaluate the firmôs earning ability and risk.

Q-15 Explain the significance and limitations of the ratio analysis.

A-15 Significance: Ratio analysis is very useful to determine or evaluate the profitability of operations of the firm, stability of profitability, the trend of profitability the efficiency in utilization of assets of the firm, the liquidity position, capacity to raise the debt funds, cash and funds flow, etc. When the ratios of a firm of a particular year or period are compared with past ratios of the firm, or/and projected ratios of firm, also with industry average or competitorôs ratios, it gives more insight to evaluate financial strength and weaknesses of the firm.

The following are the limitations of ratios:

i. It is quite difficult to find out proper basis of comparison.
ii. The cross sectional comparison becomes difficult on account for difference in situations of two firmsôor within the same firm over the years.
iii. On account of changing value of money, the comparisons of ratios over the period become invalid, so the interpretations become invalid.
iv. The difference in the definitions of items in the Balance Sheet and P & L statement make the interpretation of ratios difficult.
v. The ratios are calculated at a point of time, so they are static in nature. They do not reveal changes which have taken place between dates of two balance sheets.
vi. The ratios are calculated from past historical data and statements. For outside analyst, it necessarily does not reflect the financial position and performance in the future.

CHAPTER 26

FINANCIAL PLANNING AND STRATEGY

Q-1 What is a financial planning? How does it differ from financial forecasting?

A-1 The process of estimating the funds requirements of a firm; to finance its current and fixed assets to meet the expected growth in business; and determining the sources of funds is called financial planning. Financial forecasting is an integral part of financial planning. Forecasting uses past data to estimate the future financial requirements.

Forecasts are merely estimates based on the past data; planning means what a company would like to happen in the future, and includes necessary action plans for realizing the predetermined intensions. Financial planning is a means for achievement of growth and profitability objectives by making planned investment and financing decisions.

Q-2 Explain the steps involved in preparing a financial plan. What are the merits of a financial planning?

A-2 The following steps are involved in preparing a financial plan.

(1) Analyze the firmôs past performance and establish relationships between financial variables.
(2) Analyze the firmôs strength with respect to operating characteristics like product, market competition, production, operating risks, etc.
(3) Workout the firmôs investment needs and its capacity to generate cash flows from operations.
(4) Also workout the appropriate means to raise the external funds, based on investment and dividend policies; and also the long-term financial health and survival plan.

Financial planning supports the management to ascertain the need of assets to sustain the higher growth in sales, by taking proper investment and financing decision, based on long-term projections (normally of three or five years).

Q-3 Is there a relationship between strategic planning and financial planning? Explain.

A-3 Financial planning of a company has close links with strategic planning. Strategic planning considers all markets, including product, labour and capital, as imperfect and changing. Strategies are developed to manage the business firm in uncertain and imperfect market conditions and environment and exploit opportunities. The companyôs strategy establishes an effective and efficient match between its resources, opportunities and risks. Firms develop financial plan within the overall framework of strategic plan.

Q-4 What is a financial model? Illustrate the development of a simple financial model. What are the advantages and limitations of a financial model?

A-4 A financial planning model establishes the relationship between financial variables and targets, and facilitates the financial forecasting and planning process. A model makes it easy for the financial managers to prepare financial forecasts. It makes financial forecasting automatic and saves the financial managersô time and efforts performing a tedious activity. Financial planning models help in examining the consequences of alternative financial strategies. A financial planning model has three components ï Inputs, Model and Output.

Q-5 What is meant by sustainable growth? Explain sustainable growth models with illustrations.

A-5 Sustainable growth may be defined as the annual percentage growth in sales that is consistent with the firmôs financial policies (assuming no issue of fresh equity). The following model can

be used to determine the sustainable growth (g_S) in sales:

$$\text{sustainable growth} = \frac{\text{net margin} \times \text{retention} \times \text{leverage}}{\text{assets - to - sales} - (\text{net margin} \times \text{retention} \times \text{leverage})}$$

The net asset to sales ratio determines the requirement of funds for investing in assets to support a given level of sales. The requirement for funds would increase with expanding sales. The net profit minus the dividends is an internal source of funds. Thus, the product of net profit to sales ratio and retained profit to net profit (net margin × retention ratio) gives an idea of the funds available internally to support the growth of the firm. Retained earnings increase the debt raising capacity of the firm. Thus, given the target capital structure, the total funds would be equal to retained earnings plus debt supported by the retained earnings. Net assets or capital employed (*viz*. debt plus equity) to equity is a leverage measure, and is equal to one plus debtï equity ratio. Suppose the following for a firm: PAT = Rs 100; sales = Rs 5000; dividends = Rs 400; NA= Debt + NW (equity) = Rs 2500; NW = Rs 1250. The sustainable growth is:

$$\text{sustainable growth} = \frac{100/5000 \times 60/100 \times 2500/1250}{2500/5000 - (100/5000 \times 60/100 \times 2500/1250)}$$

$$= \frac{0.02 \times 0.6 \times 2}{0.5 - (0.02 \times 0.6 \times 2)} = 0.05 = 5\%$$

A more general method of determining the sustainable growth rate in the case of multi-product or multi-division company is to calculate the sustainable growth rate at the corporate level in terms of growth in assets.

$$\text{Sustainable growth} = \text{asset turnover} \times \text{profit margin} \times \text{income leverage}$$

$$\times \text{retention ratio} \times \text{financial leverage}$$

$$g_s = \frac{S}{NA} \times \frac{PBIT}{S} \times \frac{PAT}{PBIT} \times \frac{RE}{PAT} \times \frac{NA}{NW}$$

CHAPTER 27

PRINCIPLES OF WORKING CAPITAL MANAGEMENT

Q.1 Explain the concept of working capital. Are gross and net concepts of working capital exclusive? Discuss.

A.1 Working capital signifies money required for day-to-day operations of an organization. No business can run without the provision of adequate working capital.

There are two concepts of working capital. Gross working capital refers to the firmôs investment in current assets. Net working capital means the difference between current assets and current liabilities, and therefore, represents that position of current assets which the firm has to finance either from long term funds or bank borrowings. Both concepts have equal significance from the managementôs view point, so they are not exclusive.

The gross working capital concept focuses attention on optimization of investment in current assets, and effective and economical financing of current assets. The net working capital concept is qualitative, indicates the liquidity position of the firm and suggests the extent to which working capital needs may be financed by permanent sources of funds.

Q.2 What is the importance of working capital for a manufacturing firm? What shall be the repercussions if a firm has (a) paucity of working capital, (b) excess working capital?

A.2 A manufacturing firm is required to invest in current assets for a smooth, uninterrupted production and sales. How much a firm will invest in current assets will depend on its operating cycle. Operating cycle is defined as the time duration which the firm requires to manufacture and sell the product and collect cash.

Investment is current assets should be just adequate to the needs of the firm. Excessive investment in current assets impairs the firmôs profitability, as idle investment earns nothing. On the other hand, inadequate (i.e. paucity) amount of working capital can threaten solvency of the firm because of its inability to meet its current obligations.

Q.3 What is the concept of working capital cycle? What is meant by cash conversion cycle? Why are these concepts important in working capital management? Give an example to illustrate.

A.3 Operating cycle or working capital cycle is the time duration required to convert inventories into production into sales into cash. Thus, working capital cycle refers to the acquisition of resources, conversion of raw materials into work-in-process into finished goods, conversion of finished goods into sales and collection of sales. Larger the working capital cycle, larger the investment in current assets.

The main objective of a firm is to maximize shareholdersô wealth. One of the major ingredients of achieving it is to maximize profit. The amount of profit largely depends on volume of sales. In any firm, a major portion of sales is on credit terms. There is always time gap between the day of sale and day of its realization from customers. Realization of funds from customer will take time but

the firm has to arrange money for purchase of raw materials and components, to pay for salary, wages and other expenses. Hence, the sufficient working capital is needed so that the flow of product from raw material stage to its completion to finished goods is not obstructed for want of working capital. Similarly, working capital is needed to sustain sales activity. The operating cycle can be said to be reason of the need for working capital. So, working capital funds are required to finance the amount blocked in the operating cycle.

Q.4 Briefly explain factors that determine the working capital needs of a firm.

A.4 The following is the description of factors which generally influence the working capital requirements of the firm.

1. Nature of business: Service organizations do not hold any level of inventory or the level of inventory may be very low. Hence, they require very less amount of working capital, while the working capital requirements of trading or manufacturing organizations are relatively very high.
2. Volume of sales: The higher the volume of sales, the higher the requirement of working capital.
3. The larger the manufacturing cycle, the higher is the volume working capital needed to finance blockage of money in raw material, work-in-progress and finished goods.
4. If the firm is following a liberal credit policy for its customers, it will result in higher investment in receivables, leading to requirement of more working capital.
5. During the periods when inflation rate is high, need for working capital will also be high.
6. If the creditworthiness of an organization is good, it may manage the business with less amount of working capital.
7. Seasonal fluctuations: During peak season, higher working capital is needed; while during dull season, lower working capital is required.
8. If the organizationôs expected growth rate is high, than working capital requirement will be higher to sustain higher volume of sales etc.

Q.5 How is working capital affected by (a) sales, (b) technology and production policy, and (c) inflation? Explain.

A.5 Sales: The working capital needs of a firm are related to its sales. A growing firm may need to invest funds in fixed assets, and also to increase investment in current assets to support enlarged scale of operations. Hence, the funds needed are quite large.

The seasonal and cyclical fluctuations in demand for a firmôs products and services affect the working capital requirement. In the same way, when there is an upward swing in the economy, sales will also increase; correspondingly, the firmôs investment in inventories, debtors, etc. will also increase.

Technology and Manufacturing Policy: A manufacturing firm has a manufacturing cycle, so any delay in manufacturing process will result in the accumulation of work-in-process, resulting into more funds blocked in working capital. In order to resolve the problem of working capital, a steady production policy needs to be implemented. But, if costs and risks of maintaining a constant

production schedule are high, the firm may adopt a variable production policy, varying its production schedules in accordance with changing demand.

If there are alternative technologies of manufacturing a product, the technological process with the shortest manufacturing cycle may be chosen, to have lesser amount of investment in working capital.

Inflation: Generally, inflation i.e., rising price levels will require a firm to maintain higher amount of working capital. Same levels of current assets will need increased investment when prices are increasing.

Q.6 Define working capital management. Why is it important to study the management of working capital as a separate area in financial management?

A.6 Working capital management refers to the administration of all aspects of current assets, namely cash, marketable securities, debtors and stocks and current liabilities. There is a direct relationship between a firmôs growth and its working capital needs. As sales grow, the firm needs to invest more in components of working capital. So, the finance manager should be aware of such needs and finance them quickly. Financial manager should pay special attention to the management of current assets on a continuing basis to curtail unnecessary investment in current assets, and in turn to manage working capital in the best possible way to get the maximum benefit.

Q.7 Illustrate the profitability-solvency tangle in the current assets holding.

A.7 Solvency refers to the firmôs continuous ability to meet maturing obligations. To ensure solvency, the firm should be very liquid, which means larger current assets holdings. A liquid firm has very less risk of insolvency; it will hardly experience a cash shortage or stock-out situation. However, there is a cost associated with maintaining a sound liquidity position. A considerable amount of the funds will be tied up in current assets, and to the extent this investment is idle, the firmôs profitability will suffer.

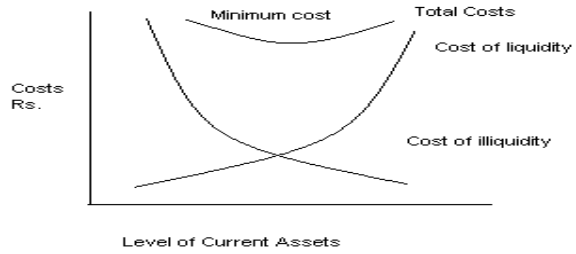
To have higher profitability, the firm may sacrifice solvency and maintain a relatively low level of current assets. In turn, the solvency would be threatened and would be exposed to greater risk of cash shortage and stock-outs. The risk-return trade-off of working capital management is illustrated below.

	Firm A Rs.	Firm B Rs.	Firm C Rs.
EBIT	150,000	150,000	150,000
Fixed assets	500,000	500,000	500,000
Current assets	500,000	400,000	300,000
Total assets	1000,000	900,000	800,000
Return on total assets (EBIT/TA)	15.00%	16.67%	18.75%

From the above illustrations, it can be concluded that firm A follows conservative policy, provides greatest solvency, but also the lowest return on total assets (ROTA). On the other hand, firm C follows most aggressive policy, yields highest return but provides lowest liquidity, and thus, is very risky to the firm. Firm B demonstrates a moderate policy.

Q.8 How would you determine the optimum level of current assets? Illustrate your answer.

A.8 The optimum level of current assets can be determined by balancing the profitability-solvency tangle by minimizing total cost ï cost of liquidity and cost of illiquidity. The cost of liquidity increases with the level of current assets, through low rates of return. The cost of illiquidity is the cost of holding insufficient current assets. This may force the firm to borrow at high rate of interest, and/or stock out situations leads to loss of sales, etc. This is illustrated in the following graph.



It is indicated that with the level of current assets, the cost of liquidity increases while the cost of illiquidity decrease, and vice versa. The firm should maintain current assets at that level where the sum of these two costs is minimized.

Q.9 Explain the costs of liquidity and illiquidity. What is the impact of these costs on the level of current assets?

A.9 The cost of liquidity means low rates of return on assets invested. If the firmôs level of current assets is very high, it has excessive liquidity. Its return on assets will be low, as funds tied up in idle cash and stocks earn nothing and high levels of debtors reduce profitability. In short, the cost of liquidity increases with the level of current assets.

The cost of illiquidity is the cost of holding insufficient current assts. The firm will not be in a position to honour its obligations if it carries too little cash. This may force the firm to borrow at high rate of interest and/or to have stock-out situations result into loss of sales. This in turn further reduces the current assets, and vicious circle will continue, which will in turn hamper the growth of firm.

Q.10 ñMerely increasing the level of current asset holding does not necessarily reduce the riskiness of the firm. Rather, the composition of current assets, whether highly liquid or highly illiquid, is the important factor to consider.ò Explain your position.

A.10 The magnitude of current assets needed is not always the same, it increases and decreases over time. However, there is always a minimum level of current assets which is continuously required by the firm to carry on its business operations, which is referred to as permanent fixed working capital. The extra working capital, i.e., variable or fluctuating or temporary working capital, needed to support the changing production and sales activities.

Depending upon the changes in production and sales, the need for working capital, over and above permanent working capital, will fluctuate. The temporary working capital is created by the firm to meet liquidity requirements that will last only temporarily.

Q.11 Explain the merit of a matching financing plan relative to a financing plan that extensively uses (a) long-term financing, or (b) short-term financing.

A.11 When the firm follows matching approach, i.e., hedging approach, long term financing will be used to finance fixed assets and permanent current assets and short term financing to finance temporary or variable current assets.

As the level of fixed assets increases, the long term financing level also increases. Under matching plan, no short term financing will be used if the firm has a fixed current assets need only. As the level of current assets increases, the short-term financing also increases.

Short term financing may be preferred over long term financing for two reasons, i.e., the cost advantage and flexibility. Short term financing should generally be less costly than long term financing.

The short term and long term financing have a leveraging effect on shareholdersô return. In India, the short term loans cost more than long-term loans. Using short term financing to fiancé its current assets, a firm runs the risk of renewing borrowings again and again. There is always less risk of failure when the long term finance is used.

Q.12 Explain the risk-return trade-off of current assets financing.

A.12 According to matching approach, short term financing is used to finance temporary or variable working capital. Under a conservative plan, the idle long term funds can be invested in the tradable securities to conserve liquidity. Under an aggressive policy, the firm finances a part of its permanent current assets with short-term financing.

Theoretically, short term financing is may be less expensive than long term financing, but, at the same time, short term financing involves a trade-off between risk and return. This is illustrated by following example.

	Financing Plans		
	Conservative	Moderate	Aggressive
	Rs.	Rs.	Rs.
Fixed Assets	300,000	300,000	300,000
Current Assets	200,000	200,000	200,000
Total Assets	500,000	500,000	500,000
Short term debt @ 12%	60,000	150,000	300,000
Long term debt @ 14%	240,000	150,000	0
PBIT	90,000	90,000	90,000
Interest	48,800	39,000	36,000
PBT	49,200	51,000	54,000
Tax @ 35%	17,220	17,850	18,900
PAT/Net Income	31,980	33,150	35,100
Return on Equity	16%	16.58%	17.55%
SF/TF	12%	30%	60%

The return on equity is highest in aggressive policy, but it is most risky as short term financing as a ratio of total financing is maximum, and vice-versa for conservative approach.

Q.13 Do you recommend that a firm should finance its current assets entirely with short term financing? Explain your answer.

A.13 No, it is not advisable to use short term financing to finance its entire current assets. The magnitude of current assets increases or decreases over time and also with respect to level of activity. However, there is always a minimum level of current assets which is continuously required by the firm to carry on its business operations. This is referred as permanent working capital. The permanent working capital to be treated as fixed assets for financing decision, and so it is advisable to use long term funds for financing of permanent level of current assets.

If firm uses short term financing to finance its current assets entirely, then it runs the risk of renewing borrowings again and again. This continued financing exposes the firm to certain risks like to borrow during stringent credit, and/or to borrow at most inconvenient terms, etc.

Q.14 What methods do you suggest for estimating working capital needs? Illustrate your answer.

A.14 The most appropriate methods for estimating working capital needs are enumerated hereunder:

1. Operating cycle concept: In this method, the estimates of working capital requirements on the basis of average holding period of current assets and relating them to costs based on companyôs expectations and experiences. This value of total current assets is known as gross working capital. From

gross working capital, the expected current liabilities like sundry creditors for raw materials, expenses, etc are deducted to find net working capital.

2. Current assets holding period method: This method is based on operating cycle period. Here, the working capital requirement equals to gross working capital requirement.
3. Ratio to sales method: The working capital requirements are estimated as a ratio of sales for each component of working capital.
4. Ratio of fixed investment method: The working capital is estimated as a percentage of fixed investment.

The above methods of estimating working capital requirements are illustrated as under:

	Rs.
Net material costs	179,200
Manufacturing overhead (other than depreciation)	628,800
Depreciation	160,000
Total Product Costs	968,000
Annual Sales	1,448,000
PBIT	480,000
Investment	1,600,000
PBDIT (PBIT + Depreciation)	640,000

Assume that raw material stock for one month; semi-finished material for one month (based on raw material plus one half of normal conversion cost); finished material in one monthôs supply; debtors-one month sales; operating cost-one monthôs total costs; suppliers for raw material provides two monthsô credit.

Estimation of Working Capital Requirements:

Method I: (Operating cycle approach)

Particulars	Rs.
Raw material stock (179,200 ÷ 12)	14,933
Semi-finished stock:	
[14,933 + (628,800 ÷ 2 ÷ 12)]	41,133
Finished goods stock (968,000 ÷ 12)	80,667
Debtors (1,448,000 ÷ 12)	120,667
Operating cash (968,000 ÷ 12)	80,667
Total current assets	338,067
Less: Current liabilities (179,200 ÷ 12 × 2)	29,867
Net working capital requirement	308,200

Method II (Current assets holding period approach)

Working capital requirement = Total current assets	338,067

Method III (Ratio to Sales Method)

Assume that industryôs average ratio is 30%. Therefore, working capital is 30% of annual sales, i.e., Rs. 434,400 (30% ×1,448,000)

Method IV : Ratio of fixed investment method:

Assume 15% the average rate of fixed investment. Hence, the working capital requirement Rs. 240,000 (i.e., 15% ×1,600,000).

All above methods are subject to error if markets are seasonal, and/or estimate is inaccurate.

A number of factors govern the choice of methods of estimating working capital. Therefore, each factor, for example, seasonal variations, variability in input factorsô prices, production cycle, etc., should be given due weightage in projecting working capital requirements.

CHAPTER 28

RECEIVABLES MANAGEMENT AND FACTORING

Q.1 Explain the objective of credit policy? What is an optimum credit policy? Discuss.

A.1 The objective of credit policy is to promote sales up to that point where profit is maximized. To achieve this basic goal, the firm should manage its credit policy in an effective manner to expand its sales, regulate and control the credit and its management costs, and maintain debtors at an optimum level.

Optimum credit policy is the policy which maximizes the firmôs value by minimizing total cost for a given level of revenue. The value of the firm is maximized when the incremental rate of return (also called marginal rate of return) of an investment is equal to the incremental cost of funds (also called marginal cost of capital) used to finance the investment in receivables. The incremental rate of return can be calculated as incremental operating profit divided by the incremental investment in receivable. The incremental cost of funds is the rate of return required by the suppliers of funds, given the risk of investment in accounts receivable.

Q.2 Is the credit policy that maximizes expected operating profit an optimum credit policy? Explain.

A.2 Optimum credit policy does not mean the policy that maximizes the expected operating profit. The cost of investment should also be considered. It means the policy that maximises the net incremental benefit, that is, difference between the expected operating profit and the cost of capital.

Q.3 What benefits and costs are associated with the extension of credit? How should they be combined to obtain an appropriate credit policy?

A.3 The length of time for which credit is extended to customers is called the credit period. A firm lengthens credit period to increase its operating profit through expected sales. However, there will be net increase in operating profit only when the cost of extended credit period is less than the incremental operating profit.

As the firm starts loosening its credit policy, it accepts all or some of those accounts which the firm had rejected in past. Thus, the firm will recapture lost sales, and thus, lost contribution. In addition, new accounts may be turned to the firm from competitors resulting into increase contribution. The opportunity costs of lost sales declines, and opportunity benefits of new sales increases as firm loosens the credit terms.

As the firm loosens its credit policy, the credit investigation costs, credit monitoring costs, bad-debt losses, and collection costs increases in case of stringent credit policy.

The optimum or appropriate credit policy is such where the firm will obtain the maximum value for the credit policy when the incremental rate of investment in receivable is equal to the opportunity cost of capital i.e., the incremental cost of funds.

Q.4 What is the role of credit terms and credit standards in the credit policy of a firm?

A.4 Credit standards are criteria to decide to whom credit sales can be made and how much. If the firm has soft standards and sells to almost all customers, its sales may increase but its costs in the form of bad-debts losses and credit administration will also increase. The firm will have to consider the impact in terms of increase in profits and increase in costs of a change in credit standards or any other policy variable.

Credit standards influence the quality of firmôs customers, i.e., the time taken by customers to repay credit obligation, and the default rate. The time taken by customers to repay debt can be determined by average collection period (ACP). Default risk can be measured in terms of bad-debt losses ratio ï the proportion of uncollected receivable. Default risk is the likelihood that a customer will fail to repay the credit obligation. The estimate of probability of default can be determined by evaluating the character, i.e., willingness of customer to pay; customerôs ability to pay and prevailing economic and other conditions. Based, on above, firm may categorize customers into three kinds, viz., good accounts, bad accounts and moderate accounts.

The conditions for extending credit sales are called credit terms and they include the credit period and cash discount. Cash discounts are given for receiving payments before than the normal credit period. All customers do not pay within the credit period. Therefore, a firm has to make efforts to collect payments from customers. The length of time for which credit is extended to customers is called the credit period. A firmôs credit policy may be governed by the industry norms. But depending on its objective, the firm can lengthen the credit period. The firm may tighten the credit period, if customers are defaulting too frequently and bad-debt losses are building up.

Q.5 What are the objectives of the collection policy? How should it be established?

A.5 The primary objective of collection policy is to cause increase in sales, and to speed up the collection of dues. The collection policy should ensure prompt and regular collection, keep down collection costs and bad debts within limits and to maintain collection efficiency.

The collection procedure should be clearly defined in such a manner that the responsibility to collect and the follow up should be clearly defined. This responsibility may be entrusted to the separate credit department or accounts or sales department. Besides the general collection policy, firm should lay-down clear cut collection procedures for past dues or delinquent accounts.

Q.6 What shall be the effect of the following changes on the level of the firmôs receivables?

a) Interest rate increases
b) Recession
c) Production and selling costs increases
d) The firm changes its credit term from ñ2/10 net 30ò to ñ3/10 net 30ò

A.6 As the interest rate increases, the total cost of production increases resulting into more investment in receivables.

During the recession, the sales level decreases, so the investment in receivable is supposed to reduce. But the reduction may not take place on account of delayed

recovery of amount due from customers by firm. So, this may also cause the investment in receivables to increase.

The increases in production and selling costs result to more investment in receivables.

When company changes its terms from ó2/10 net 30ô to ó3/10 net 30ô, this should normally result into reduction in level of investments in receivable. But at the same moment, more customers may be willing to avail cash discount resulting into increase in discount costs.

Q.7 ñThe credit policy of a company is criticized because the bad debt losses have increased considerably and the collection period has also increased.ò Discuss under what conditions this criticism may not be justified.

A.7 Generally it is a bad credit policy if bad debts increase and collection period also increases. But in certain cases, once the company has recovered its fixed costs, selling to marginal customers may be quite profitable as the contribution ratio may be quite high. This raises the possibility of increased bad debts and high collection policy, but at the same time high profits. The company should assess the probability of the extent of default and the probability of higher pay-offs.

Q.8 What credit and collection procedures should be adopted in case of individual accounts? Discuss.

A.8 In case of individual accounts, customers may be categorized in to three types based on their creditworthiness and default risk, viz., good accounts (financially strong); bad accounts (financially very weak, high risk customers) and marginal accounts (customers with moderate financial health and risk).

The firm will have no difficulty in quickly deciding about the extension of credit to good accounts, and rejecting the credit request for bad accounts. A credit standards may be relaxed to the point where incremental returns equals to incremental costs in case of marginal accounts, by evaluating all possibility of bad-debts losses and collection costs.

The collection procedures should be firmly established for good accounts and bad accounts. The collection procedures for past dues or delinquent accounts should also be established in unambiguous terms. The marginal accounts, i.e., slow paying permanent customers, are needed to be handled tactfully. The collection process initiated quickly, without giving any chance to them, may antagonize them, and the firm may lose them to competitors. In case of marginal accounts, individual cases should be dealt with on their merits. The firm should also decide to offer cash discount for prompt payment. For some cases, company may take precautions by receiving pre-signed post dated cheques or approach for bills of exchange, etc.

Q.9 How would you monitor receivables? Explain the pros and cons of various methods.

A.9 A firm needs to continuously monitor and control its receivables to ensure the success of collection efforts. Following are the methods to monitor and evaluate the management of receivables.

1. Collection period method: The average collection period is calculated, and can be compared with the firmôs stated credit period to judge the collection efficiency. The average collection period measures the quality of receivable

since it indicates the speed of their collectibility. Collection period only provides an aggregate picture. Further, it does not provide very meaningful information about outstanding receivable when sales variations are quite high.

2. Aging schedule: It breaks down receivables according to the length of the time for which they have been outstanding. It helps to spot out slow-paying customers. It also suffers from the problem of aggregation, and does not relate receivables to sales of the same period.
3. Collection Experience Matrix: In this method, firm tries to relate receivables to the sales of the same period. In this method, sales over a period of time are shown horizontally and associated receivable vertically in a tabular form; thus, a matrix is constructed. This method indicates which monthsô sales receivable are uncollected. It helps to focus efforts on the collection month-wise.

Q.10 What is factoring? What functions does it perform?

A.10 Factoring involves an outright sale of receivables of an organization to a financial institution or private agency, called factor. A factor specializes in management of trade credit. Factors collect receivables and also advance cash against receivables to solve the client firmsô liquidity problem. For providing their services, they charge interest on advance and commission for other services.

The factor performs the following functions:

1. Factors provide financial assistance to the client by extending advance cash against book debts.
2. Sales ledger administration and credit management services to his clients, by maintaining the ledger of customers of clients, taking all follow-up actions, etc. He also helps the clients and advises from the stage of credit extension to customers to the final stage of book debt collection.
3. Protection against default in payment by debtors, by initializing legal actions at an early time.
4. Credit collection: When individual book debts become due from the customer, the factor undertakes all collection activity that is necessary. He guards the interest of his client, by developing better strategy against possible defaults by customers of his client; etc.

Q.11 Explain the features of various types of factoring.

A.11 Factors are broadly into four categories.

1. Full service non-recourse: Book debts are purchased by the factor, assuming 100% credit risk on his account. The factor maintains the sales ledger and accounts, takes full responsibility to recover dues from customers of client. In the event of bad debts, he bears the loss.
2. Full service recourse factoring: In this method, client is not protected against the risk of bad debts. The bad debts risk is borne by the company. If the factor has advanced funds against book debts on which a customer subsequently defaults, the client has to refund the money to the factor.
3. Bulk or agency factoring: Under this method, client continues to administer credit and operate sales ledger. The factor financing the book debt against bulk either on recourse or without recourse. It is a method of financing book debts.

4. Non-notification factoring: In this type of factoring, customers are not informed about the factoring agreement. It involves the factor keeping ledger accounts, deals with clientôs customers, performs all usual functions without a disclosure to customers that he owns the book debts.

The non-recourse or recourse factoring may be advance factoring, (the factor advances cash against book debt to client immediately) or maturity factoring (payment will be made by factor to client when the book debts have been collected or matured as the case may be).

Q.12 How does factoring differ from bill discounting and short-term financing?

A.12 Bill discounting or invoice discounting consists of client drawing bills of exchange for goods and services on buyers, and then discounting it with bank for a charge. Factoring is like bill discounting plus specialized management of book debt along with protection against default risk (in case of non-recourse factoring). Bill discounting is not convenient for companies having large number of small value customers; while factoring is convenient.

Factoring provides short term financial assistance to the client, but it differs from short term credit in the following manner:

Factoring involve sale of book debts, and client gets advances against expected debt collection, as and when he needs cash. Factor also undertakes the total management of clientôs book debts.

CHAPTER 29

INVENTORY MANAGEMENT

Q.1 Why should inventory be held? Why is inventory management important? Explain the objectives of inventory management.

A.1 The manufacturing companies hold inventories in the form of raw materials, work-in-process and finished goods. There are three motives for holding inventories.

1. To facilitate smooth production and sales operation (transaction motive).
2. To guard against the risk of unpredictable changes in usage rate and delivery time (precautionary motive).
3. To take advantage of price fluctuations (speculative motive).

Inventory management is important because inventories constitute about 60% of current assets of public limited companies in India.

The objective of inventory management should:

1. to ensure a continuous supply of raw materials to facilitate uninterrupted production,
2. maintain sufficient stock of raw materials in periods of short supply and anticipate price changes,
3. maintain sufficient finished goods inventory for smooth sales operation, and efficient customer service,
4. minimize the carrying cost and time, and
5. control investment in inventories and keep it at an optimum level.

Q.2 ñThere are two dangerous situations that management should usually avoid in controlling inventories.ò Identify the danger points and explain.

A.2 The excessive and inadequate inventories are two danger points within which the firm should operate. The objective of inventory management should be to determine and maintain optimum level of inventory investment. The optimum level of inventory will lie between two danger points.

The excessive level of inventories consumes funds of the firm, and thus it involves an opportunity costs. The carrying costs, such as storage expenses, etc., also increase in proportion of volume of inventory. This may create physical deterioration of inventories while in storage. The inventories once purchased and stored normally are difficult to dispose off subsequently at the same value. In other words, the value of inventory reduces with the increasing holding period.

The inadequate investment in inventories involves the following consequences.

1. Results in frequent production interruptions.
2. It may not be possible for the company to serve the customers properly and they may shift to competitors.

So, the aim of inventory management is to maintain sufficient inventory for the smooth production and sales operations.

Q.3 Define the economic order quantity. How is it computed?

A.3 Economic order quantity (EOQ) is the fixed quantity of material which is ordered when the stock comes down to a reorder level. EOQ is at the optimum level when the total of ordering costs and carrying costs is minimum. It is the point where

ordering costs equal the carrying costs. Ordering costs include costs incurred on requisitioning, purchase ordering, transporting, receiving, inspecting and storing. It has direct relationship with number of orders placed. Carrying cost includes storage, insurance, taxes, clerical and staff service costs, costs of deterioration and obsolescence, etc.

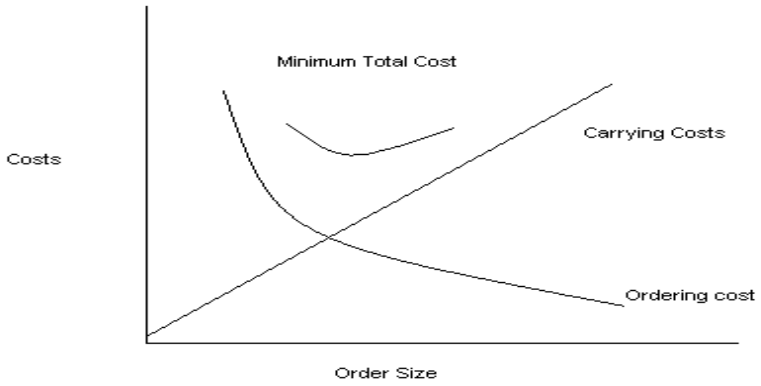
Three methods are available to determine the economic order quantity (EOQ). It has been assumed that total amount of demand is known with certainty and usage of materials is steady. Also, ordering cost per order and carrying cost per unit are assumed to be constant.

1. Trial and error (T&E) approach: The inventory levels under different lot size alternatives are worked out by preparing tables. The T&E method is a mechanical method involving somewhat tedious computations.
2. Order formula approach:

$$EOQ = \sqrt{\frac{2AO}{C}}$$

Where, A is total requirement, O is the ordering costs and C is the carrying costs.

3. Graphic approach: In the graphical approach, costs-carrying, ordering and total ï are plotted on vertical axis and horizontal axis is used to represent the order size. The EOQ occurs at the point where total cost is minimum.



Q.4 ñThe management of inventory must meet two opposing needs.ò What are they? How is a balance brought in these two opposing needs?

A.4 The efficient inventory management helps in balancing inventory carrying costs and stock-out costs. Excessive inventory means more carrying costs but less stock-out situations while less inventory implies less carrying costs but more stock-out situations.

It is difficult to predict usage and lead time accurately. If actual usage increases or the delivery of inventory is delayed, the firm can face a problem of stock-out which can prove to be the costly. Therefore, in order to guard against the stock-out, the firm may maintain a safety stock, as cushion against expected increased

usage and/or delayed delivery time. Thus, the re-order point (i.e. stock level when to place order for inventory replenishment) can be increased by safety stock.

The excess inventory level will safeguard the firm against stock-out situation, but it is also costly with respect to inventory carrying costs. Carrying costs include storage, insurance, taxes, clerical and staff service costs, costs of deterioration etc. The balance can be worked out between two by applying cost-benefit analysis, and by evaluating alternative strategies of safety stock level.

Q.5 ñThe practical approach is determining economic order quantity is concerned with locating a minimum cost range rather than a minimum cost point.ò Explain.

A.5 The total costs of inventory may be insensitive to moderate changes in order size. Hence, there may be range rather than an exact point of optimum quantity. To determine this range, the order size may be changed by some percentage and the impact on total costs may be studied. If the total costs do not change significantly, the firm can change EOQ within the range without any significant loss.

Q.6 What are ordering and carrying costs? What is their role in inventory control?

A.6 The ordering costs includes the entire costs of acquiring raw materials. They include costs incurred relating to requisitioning, purchase ordering, transporting, receiving, inspecting and storing, etc. It increases in proportion to the number of orders placed. The ordering costs decrease with increasing size of investment.

The carrying costs are incurred for maintaining a given level of inventory. It includes storage, insurance, taxes, deterioration and obsolescence. The storage costs comprise cost of storage space, stores handling costs, and clerical and staff service costs incurred for store keeping, booking and accounting. Carrying costs vary with inventory size. They decline with increase in inventory size. The economic size of inventory would thus depend on trade-off between carrying costs and ordering costs.

Q.7 Define safety stock. How can safety stock be computed?

A.7 In practice, there is uncertainty about the lead time and/or usage rate. Under perfect certainty about usage rate and lead time, the re-order point (inventory at which firm places order to replenish inventory) will be equal to:

$$\text{Lead time} \times \text{usage rate}$$

Firms maintain safety stock which serves as a buffer or cushion to meet contingencies. In that case reorder point will be equal to:

$$\text{Lead time} \times \text{usage rate} + \text{safety stock}$$

Q.8 What are the costs of stock-outs? How should the costs of stock-out and the carrying costs be balanced to obtain the optimum safety stock?

A.8 It is difficult to predict usage and lead time accurately. If actual usage increases or the delivery of inventory is delayed, the firm can face a problem of stock-out which can prove to be the costly. Therefore, in order to guard against the stock-out, the firm may maintain a safety stock, as cushion against expected increased usage and/or delayed delivery time. Thus, the re-order point (i.e. stock level when to place order for inventory replenishment) can be increased by safety stock.

The excess inventory level will safeguard the firm against stock-out situation, but it is also costly with respect to inventory carrying costs. Carrying costs include storage, insurance, taxes, clerical and staff service costs, costs of deterioration etc.

The balance can be worked out between two extremely by applying cost-benefit analysis, and by evaluating alternative strategies of safety stock level.

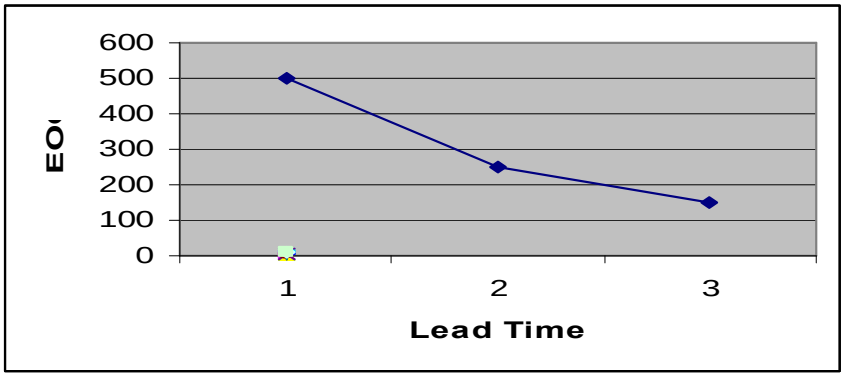
Q.9 How is the reorder point determined? Illustrate with an example and graphically.

A.9 The re-order point is that inventory level at which an order should be placed to replenish the inventory. To determine, the reorder point under certainty, we should know (1) lead time, time normally taken to replenishing inventory after the order has been placed, (2) average usage, and (3) economic order quantity. The re-order point is calculated by:

Re-order point = Lead × average usage time

For example, if economic order quantity is 500 units; lead time is three weeks and average usage is 50 units per week. If there is no lead time, i.e., delivery of inventory is instantaneous, the new order will be placed at the end of 10^{th} week [500 units/50 units]. But, as the lead time is three weeks, the new order to be placed at the end of 7^{th} week, when there are 150 [50 × 3] units in stock.

Re-order print = 3 weeks × 50 units = 150 units



Q.10 What is lead time? How does it affect the computation of reorder point under certainty and uncertainty?

A.10 Lead time is the time normally taken in replenishing inventory after the order has been placed. In the case of certainty, the usage and lead time do not fluctuate. So reorder point is simply that level which will be maintained for consumption during lead time.

Reorder point = Lead time × Average usage

It is difficult to predict usage and lead time accurately. So, in the uncertainty, the firm can face a problem of stock-out which can prove to be costly for the firm. Therefore, in order to guard against stock out, the firm may maintain safety-stock-some minimum or buffer inventory as cushion. In such case, re-order point is calculated as:

Reorder point = Lead time × Average usage + Safety stock

Q.11 What is a selective control of inventory? Why is it needed? Illustrate with an example and graph the ABC analysis.

A.11 A firm, which carries a number of items in inventory which differ in value, can follow a selective control system. The firm should, therefore, classify inventories to identify which items should receive the most efforts in controlling. A selective control system, such as the A-B-C analysis, (known as Always Better Control), classifies inventories into three categories according to the consumption value of items: A Category consists of highest value items, C category consists of lowest

value items; and B category consists of high value items. Tight control may be applied on A category of items, and relatively loose control for C category of items.

The following steps are involved in implementing the ABC analysis.

1. Classify the items of inventories, determining the expected use in units and the price per unit for each item.
2. Determine the total value of consumption.
3. Rank the items in accordance with total consumption value in ascending order.
4. Compute the ratios or percentages of number of items of each item to total units of all items, and the ratio of total value of each item to total value of all items.
5. Combine items on the basis of their value to form three categories – A, B and C.

Illustration:

Item	Units	% of total		Cumulative	Unit Price Rs.	Total Costs Rs.	% of Total		Cumulative
1	10,000	10	}		30.40	3,04,000	38	}	
2	5,000	5	} 15%	15%	51.20	2,56,000	32	}	70%
3	16,000	16	}		5.50	88,000	11	}	
4	14,000	14	} 30%	45%	5.14	72,000	09	}	90%
5	30,000	30	}		1.70	51,000	6.38	}	
6	15,000	15	} 55%	100%	1.50	22,500	2.81	}	100%
7	10,000	10	}		0.65	6,500	0.81	}	
Total	100,000					800,000			

The above table indicates that, "items A" forms 15% of total items, but represents highest value, i.e., 70%. On the other hand, "items C" forms 55% of total items, but represents only 10% of total value. "Item B" occupies middle place. Thus, highest control should be exercised on "Item A" in order to maximize profitability on its investment. In case of "Item C", simple controls will be sufficient.

Q.12 Explain the steps involved in analyzing investment in inventories. Illustrate with an example.

A.12 The analysis should involve an evaluation of the profitability of investment in inventory. The analysis of investment in inventory should be analysed in the following four steps:

1. Estimation of operating profit
2. Estimation of investment in inventory.
3. Estimation of rate of return on investment in inventory, and
4. Comparison of the rate of return on investment with the cost of funds.

The incremental analysis should be used to compute the value of operating profits, investment in inventory, rate of return and cost of funds. A change in inventory policy is desirable if the incremental rate of return exceeds the required rate of return.

The expected operating profit of each inventory policy will depend on the contribution from increased sales minus the additional carrying costs. The aim of the firm should be to maximize operating profit in relation to investment viz., expected return on investment. The investment in inventory should be measured in terms of out-of-pocket costs. The change in investment will be the sum of (1) increased finished goods inventories, and (2) corresponding increase in other net working capital.

The incremental rate of return (r) on investment can be calculated by using following formula.

$$r = \frac{\text{Incremental Operating Profit}}{\text{Incremental Investment}}$$

If the incremental rate of return, r, is greater than required rate of return, k, then particular inventory policy can be chosen.

CHAPTER 30
CASH MANAGEMENT

Q.1 Explain the three principal motives for holding cash.

A.1 Cash is required to meet a firmôs transactions and precautionary needs. A firm needs cash to make payments for acquisition of resources and services for the normal conduct of business. It keeps additional funds to meet any emergency situation. Some firms may also maintain cash for taking advantages of speculative changes in prices of input and output.

Cash in the basic input needed to keep the business running on a continuous basis. Cash shortage will disrupt the firmôs manufacturing operations, while excessive cash will simply remain idle, without contributing anything towards the firmôs profitability. So, firm should have sufficient cash, neither more nor less.

The cash for precautionary motive is the need to hold cash to meet contingencies in the future. It provides cushion or buffer to withstand some unexpected emergency.

Q.2 What are the advantages of cash planning? How does cash budget help in planning the firmôs cash flows?

A.2 Cash planning is a technique to plan and control the inflow and outflow of cash. Cash planning helps to anticipate the future cash flows and cash needs of the firm and reduces the possibility of idle cash balances (which lowers firmôs profitability) and cash deficits (which can cause the firmôs failure). It protects the financial condition of the firm, and is crucial in developing the overall operating plans of the firm.

Cash budget is the most significant device to plan for and control cash receipts and payments. A cash budget is a summary statement of the firmôs expected cash inflows and outflows over a projected time period. It gives information on the timing and magnitude of expected cash flows and cash balances over the projected period. The cash budget may differ from firm to firm. Monthly cash budgets should be prepared by a firm whose business is affected by seasonal variations. Daily or weekly cash budgets should be prepared for determining cash requirements if cash flows show extreme fluctuations. Cash budgets for a longer interval should be prepared if cash flows are relatively stable.

Q.3 Explain and illustrate the utility of cash budget.

A.3 The cash budget helps in determining the cash requirements for a pre-determined period to run a business. One of the significant roles of the cash budget is to pin-point when the money will be needed and when it can be repaid. This helps the financial manager to negotiate short term financial arrangement with banks. Cash budget also help in managing the investment of surplus cash in marketable securities. A carefully and skillfully designed cash budget helps a firm to select securities with appropriate maturities and reasonable risk, and maximize profit by investing idle funds. Multi-divisional firms use cash budgets as a tool to coordinate the flow of funds between their various divisions as well as to make financing arrangements for these operations. Cash budget may also be useful in determining the margins or minimum balances to be maintained with banks. It

also supports to scheduling payments in connections of short-term and long-term debt repayments as well as for capital expenditures programmes, etc.

Q.4 Illustrate with example the modus operandi of preparing a cash budget.

A.4 Two most commonly used methods of preparing a cash budget are (1) the receipts and disbursements method, and (2) the adjusted income method.

Receipts and disbursements method: Developing a forecast for cash inflows is the first step in preparing a cash forecast or cash budget. Three broad sources of cash inflows can be identified: (i) operating, (ii) non-operating and (iii) financial. Cash sales and collections from customers form the most important part of the operating cash inflows. The operating cash inflows are reduced to the extent of sales discounts, returns and allowances and bad debts. Non-operating cash inflows include sale of old assets and dividend and interest income. Borrowings and issuance of securities are external financial sources, and part of financial cash inflows.

Next step in the preparation of cash budget is the estimate of cash outflows. Cash outflows include

1. Operating outflows, i.e., cash purchases, payments to suppliers of materials, advances to suppliers, wages and salaries and other operating expenses
2. Capital expenditures
3. Contractual payments
4. Repayment of loan and interest and tax payments and
5. Discretionary payments like ordinary and preference dividend.

Adjusted Income Method: This method is also known as sources and uses approach. It is a projected cash flow statement which has three sections, i.e., sources of cash, uses of cash and the adjusted cash balance. It also helps in anticipating the working capital movements. In preparing the adjusted net income forecast items such as net income, depreciation, taxes, dividends, etc. can easily be determined from the companyôs annual operating budget. It separately takes into account the movements in the working capital items, and thus helps to keep a control on a firmôs working capital.

Q.5 Explain the technique that can be used to accelerate the firmôs collections.

A.5 Cash collections can be accelerated by reducing the lag or gap between the time a customer pays bill and the time the cheque is collected and funds become available for the firmôs use. For this purpose, a firm can use decentralized collection system and lock-box system to speed up the collections.

A decentralized collection procedure, called concentration banking, is a system of operating through a number of collection centres, instead of a single collection centre centralized at the firmôs head office. The basic purpose of the decentralized collections is to minimize the lag between the mailing time from customers to the firm and time when the firm can make use of the firm. Decentralized mailing system saves mailing and processing time, and thus, reduces the deposit float, and consequently, the financing requirements.

Lock-box system: In a lock-box system, the firm establishes a number of collection centres, considering customer locations and volume of remittances. At each centre, the firm hires a post office box and instructs its customers to mail

their remittances to the box. The firmôs local bank is given the authority to pick up the remittances, and deposits the cheque in the firmôs account.

Q.6 What are the advantages of decentralized collection over a centralized collection?

A.6 Under the decentralized collections, the firm will have a large number of bank accounts operated in the areas where the firm has its branches, instead of one bank account at one place in centralized collection system.

Decentralized collection system saves mailing and processing time and, thus, reduces the deposit float, and consequently, the financing requirements. This system results in potential savings which should be compared with the cost of maintaining the system.

It must be noticed that now a lot of developments and improvements have taken place in the banking in India. Now a firm can deposit cheque anywhere and the credit will be available immediately where the firm operates its account.

Q.7 What is a lock-box system? How does it help to reduce the cash balances?

A.7 In a lock-box system, the firm establishes a number of collection centres, considering customer locations and volume of remittances. At each centre, the firm hires a post office box and instructs its customers to mail their remittances to the box. The firmôs local bank picks up the cheques and deposits in the firmôs accounts.

The lock-box system eliminates the period between the time cheques are received and deposited in the bank for collection by firm. The cheques are deposited immediately and their collection process start sooner, which results into reduced deposit floats, and may in turn reduce the cash balances.

Q.8 Distinguish between a deposit float and a payment float. What are the advantages and dangers of ñplaying the floatò? Explain the techniques for managing float.

A.8 The collection float means the time gap between cheques sent by customer which are not yet collected. This time gap, i.e., delay caused by the mailing time, (the time taken by cheque in transit), and the processing time (the time taken by the firm in processing cheque for internal accounting purposes).

When the firmôs actual bank balance is greater than the balance shown in the firmôs books, the difference is called disbursement or payment float.

Playing the float means to maximize the availability of funds. The difference between the total amount of cheques drawn on a bank account and the balance shown on the bankôs book is caused by transit and processing delays. If the financial manager can accurately estimate the transit and processing delays time, he or she can invest the ófloatô during the float period to earn a return. It is a risky game and should be played very cautiously.

Q.9 What are the objectives of a firm in controlling its disbursements? How can the disbursements be slowed down?

A.9 Disbursements arise due to trade credit. The firmôs effective control of disbursements can help in conserving cash and reducing the financial requirements. The firm should make payments using credit terms to the fullest extent. Delaying disbursements result in maximum availability of funds. For proper control of disbursements, a centralized payment system may be advantageous, and payments may be made from a single central account.

Q.10 How can the appropriate level of operating cash balance be determined? How does uncertainty affect this problem?

A.10 The firm should maintain optimum - neither more nor less - cash balance for transaction purposes. It may also carry additional cash as buffer or safety stock. The amount of cash balance will depend on the risk-return trade-off.

The Baumolôs Cash Management Model provides a formal approach for determining a firmôs cash balance under certainty. The Baumolôs model makes these assumptions: (1) the firm is able to forecast its cash needs with certainty, (2) cash payments occur uniformly over a period of time, (3) opportunity cost of holding cash is known, and (4) firm will incur the same transaction cost whenever it converts securities to cash. The optimum cash balance, *C**, is obtained when the total cost is minimum. The formula for the optimum cash balance is as follows:

$$C^* = \sqrt{\frac{2cT}{k}}$$

where *C** is the optimum cash balance, *c* is the cost per transaction, *T* is the total cash needed during the year and *k* is the opportunity cost of holding cash balance. The optimum cash balance will increase with increase in the transaction cost and total funds required and decrease with the opportunity cost.

The Miller-Orr Model provides an approach for determining optimum cash balance under uncertainty. The model allows for daily cash flow variations. As per this model, there are upper control limits and lower control limits. The cash balance at any point of time is not allowed to go above the upper control limit, while it is not allowed to fall below the lower limit. In between these two levels, there is a returning point. Once cash balances reaches to upper control limit (UCL), the balance is reduced to returning point by investing in marketing securities. On the other hand, when cash balances touches to lower control limit, enough marketable securities are disposed off to restore the cash balance to returning point.

The formula for determining the distance between upper and lower control limits (called Z) is as follows:

$$(\text{Upper Limit} - \text{Lower Limit}) = (3/4 \times \text{Transaction Cost} \times \text{Cash Flow Variance} / \text{Interest Rate})^{1/3}$$

$$Z = \left(3/4 \times c\sigma^2 / i\right)^{1/3}$$

We can notice from the equation that the upper and lower limits will be far off from each other (i.e. Z will be larger) if transaction cost is higher or cash flows show greater fluctuations. The limits will come closer as the interest rate increases. Z is inversely related to the interest rate. It is noticeable that the upper control limit is three times above the lower control limit and the return point lies between the upper and the lower limits. Thus,

Upper Limit = Lower Limit + 3*Z*

Return Point = Lower Limit + *Z*

The net effect is that the firm holds the average cash balance equal to:

Average Cash Balance = Lower Limit + 4/3 *Z*

Q.11 Explain the criteria that a firm should use in choosing the short term investment alternatives in order to invest surplus cash.

A.11 A firm can invest its excess cash in many types of securities or short-term investment opportunities. The primary criterion in selecting a security will be its quickest convertibility into cash. The firm should examine the basic features of security: safety, maturity and marketability. The firm would invest in very safe securities as the cash balance invested in them is needed in near future. The short-term securities are preferred by the firm for the purpose of investing excess cash. If the security can be sold quickly without loss of price, it is highly liquid or marketable. The difference in marketability and also the default risk cause differences in the security yields.

Q.12 Other things remaining constant, what effect would the following events have on the average cash balance that a firm keeps for transaction purposes? Explain your answer.

a) Increase in interest rates

b) It becomes more expensive to transfer funds from cash to securities and vice versa.

c) The variability of net cash flow increases.

A.12 a) Increase in interest rates encourages the financial manager to review the cash needs for transaction purpose, and to reduce the optimum cash balance needs to earn the better yields by investing money in short-term securities or marketable securities.

b) If the transfer of funds from cash to securities and vice-versa becomes more expensive, then financial manager likes to have lesser total transaction costs for conversion. This will result into increase in optimum cash balance.

c) As the variability of cash inflows increases, so financial manager would not like to have cash shortages, i.e., stock-out situations, so he will maintain larger amount of optimum cash balance.

CHAPTER 31

WORKING CAPITAL FINANCE

Q.1 Explain the importance of trade credit and accruals as sources of working capital. What is the cost of these sources?

A.1 Trade credit refers to the credit that a customer gets from suppliers of goods in normal course of business. This deferral of payments is a short term financing, and a major source of finance. It is mostly granted on an open account basis. It may also take the form of bills payable. It is a spontaneous source of financing. It appears to be cost free since it does not involve explicit interest charges. But, in practice, it involves implicit costs, i.e., via the increased price of goods supplied to customer.

Accrued expenses represent a liability that a firm has to pay for the services which it has already received. They represent spontaneous, interest free sources of financing. The most important components of accruals are wages and salaries, taxes and interest. Accrued taxes and interest also constitute another source of financing.

Q.2 Explain the rationale of the Tandon Committeeôs recommendations.

A.2 The Tandon Committee was appointed by the Reserve Bank of India in July, 1974 to suggest guidelines for the rational allocation and optimum use of bank credit.

Bank credit is a scarce resource; hence it should be optimally used under all circumstances. The bank credit should also be available, in addition to industrial units, to agriculture, small-scale industry, farmers, small man and many others. The bank funds should be utilized in most efficient way by all sectors of the economy. The Tandon Committee, have given due weightage on above rationale, while recommended the three methods for financing.

Q.3 Describe the important features of the Tandon Committeeôs recommendations:

A.3 The important features of Tandon Committeeôs recommendations are enumerated hereunder in brief.

1) The borrower should indicate the likely demand of credit in a realistic manner.
2) The banker should finance only the genuine production needs of the borrower.
3) The borrower should maintain reasonable levels of inventory and receivables; just enough to carry on his target production.
4) The working capital needs of the borrower will be partly financed by bank; for the remaining, the borrower should depend upon his own funds, generated internally or externally.
5) The committee has pointed out that borrower should be allowed to hold a reasonable level of current assets, particularly inventory and receivable. The committee have suggested norms separately for heavy engineering, heavy seasonal, small scale industries etc.
6) The committee admitted that norms cannot be followed rigidly. It allowed flexibility in the application of norms when a major change in the environment justifies.
7) The committee also recommended the bifurcation of total credit into fixed and fluctuating parts.

8) They also recommended methods for calculation of maximum permissible bank finance.
9) The committee also recommended the flow of information from borrower to the bank on regular basis, comparing estimates and actuals, etc.

Q.4 What are the implications of the recommendations suggested by the Tandon Committee?

A.4 Bankers found difficulties in implementing the committeeôs recommendations. The Tandon Committee report has brought about a perspective change in the outlook and attitude of both the bankers and their customers. The report has also helped in bringing a financial discipline through a balanced and integrated scheme for bank lending.

Q.5 Define commercial paper. Explain its pros and cons.

A.5 Commercial paper (CP) is a form of unsecured promissory note issued by firms to raise short term funds. The CP are issued by companies having net worth of Rs. 10 crore or more, and are financially sound and highest rated companies. In addition to this, companies should have maximum permissible bank finance of not less than Rs. 25 crore, and are listed on stock exchange. The RBI provided that size of issue should be at least Rs. 1 crore and the size of the each CP should not be less than Rs. 25 lakh. In India, the maturity of CP runs between 91 to 180 days. It is expected that CP is used for short term financing only, as an alternative to bank credit and other short term sources. The interest rate of CP will be determined by market.

Advantages:

1) The CP is an alternative source of raising short term finance.
2) It is cheaper source of finance in comparison to bank credit.

Disadvantages or limitations:

1) As it is impersonal method, so it may not be possible to get the maturity of CP extended.
2) It cannot be redeemed until maturity, and will have to incur interest costs.
3) A firm facing temporary liquidity problems may not be able to raise funds by issuing new CP etc.