

CAIIB PAPER 1 CAPSULE

Advanced Bank Management

1 ECONOMIC ANALYSIS

2 BUSINESS MATHEMATICS

3 HUMAN RESOURCE MANAGEMENT

4 CREDIT MANAGEMENT



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CAIIB Paper 1 Advanced Bank Management (Capsule)

No. of Module	Module Name	Page No.
Module A	Economic Analysis	2-30
Module B	Business Mathematics	31-60
Module C	Human Resource Management	61-94
Module D	Credit Management	95-120



Module A: Economic Analysis

Index

Unit 1	Fundamentals of Economics, Microeconomics and Macroeconomics and Types of Economies
Unit 2	Supply and Demand
Unit 3	Money Supply and Inflation
Unit 4	Theories of Interest
Unit 5	Business Cycles
Unit 6	Indian Economy & Various Sectors of the Economy

Unit 7	Economic Reforms
Unit 8	Monetary Policy and Fiscal Policy
Unit 9	GDP Concepts
Unit 10	Union Budget
Unit 11	Challenges Facing Indian Economy

Unit 1: Fundamentals of Economics, Microeconomics and Macroeconomics and Types of Economies

Economics

Economics deal with the production, allocation and use of goods and services.

Adam Smith's (Father of Modern Economics)

- An Enquiry into the Nature and causes of the wealth of Nations (in 1776).
- Define Economics as "study of wealth" also known as Wealth Definition.

Marshall's Definition: (Known as Welfare Definition)

- By Prof. Alfred Marshall.
- "Economics is study of mankind in the ordinary business life."
- More important given to Study of Man.

Robbins Definition: (Known as Scarcity Definition)

- "Economics is the science which studies human behaviour as a relationship between end and scarce means which have alternative uses."
- By Lionel Robbins.
- Economics= Study of means and ends.

Analysis of Definition :

- (a) Man has unlimited wants.
- (b) The means to satisfy human wants are limited.
- (c) Resources are not only limited but have alternative use.

(d) Man has to make choice.

Microeconomics Vs Macroeconomics

Microeconomics	Macroeconomics
Concerned with the behaviours of Individual entities such as Markets, Firm and Households.	Concerned with the overall Performance of the Economy.
It studies “how households and firms make decision to allocate limited resources, typically in markets where goods or services are being bought and sold.	It study aggregated indication such as GDP, Unemployment rates and price indices to understand “how the whole economy function.”
Microeconomics analyses the market behaviour of individual consumers and firms in an attempt to understand the decision making process of firms and household.	It deals with performance, Structure and behaviour of national or regional economy as whole.

Unit 2: Supply and Demand

Demand

- The amount of a commodity people buy depends on its price. The higher the price of an article, other things held constant; fewer the units consumers are willing to buy. This relationship between price and quantity bought is called the demand schedule, or the demand curve.
- **Theory of Supply and Demand** shows how consumer preferences determine consumer demand for commodities, while business costs determine the supply of commodities.

Demand Schedule or the Demand Curve

- A **demand schedule** is a table that shows the **quantity demanded** at **different prices in the market**. A **demand curve** shows the **relationship between quantity demanded and price in a given market on a graph**. The law of demand states that a higher price typically leads to a lower quantity demanded.

Law of Downward – sloping demand

- When the Price of a commodity is raised (and other things being constant), buyers tend to buy less of the commodity. Similarly, when the price is lowered, other things being constant, quantity demanded increases.

Factors influences the Demand Curve

- Average levels of income
- The size of market/population
- The prices and availability of related goods
- Tastes or Preferences - Special Influences

There are two types of Demand Schedules:

- Individual Demand Schedule
- Market Demand Schedule

Individual Demand Schedule

It is a demanding schedule that depicts the demand of an individual customer for a commodity in relation to its price. Let us study it with the help of an example.

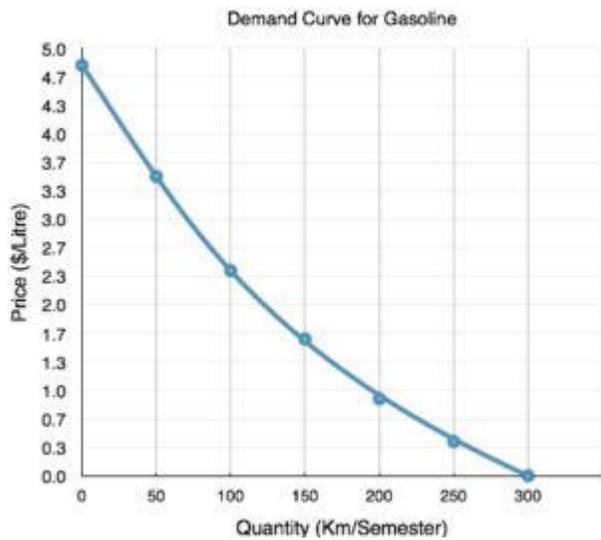
Price per unit of commodity X (Px)	Quantity demanded of commodity X (Dx)
100	50
200	40
300	30
400	20
500	10

The above schedule depicts the individual demand schedule. We can see that when the price of the commodity is ₹100, its demand is 50 units. Similarly, when its price is ₹500, its demand decreases to 10 units.

Thus, we can conclude that as the price falls the demand increases and as the price raises the demand decreases. Hence, there exists an inverse relationship between the price and quantity demanded.

Individual Demand Curve

It is a graphical representation of the individual demand schedule. The X-axis represents the demand and Y-axis represents the price of a commodity.



The above demand curve shows the demand for Gasoline. When the price of gasoline is \$3.5 per litre, its demand is 50 litres and when the price is \$0.5 per litre, its demand is 250 litres.

Market Demand Schedule

It is a summation of the individual demand schedules and depicts the demand of different customers for a commodity in relation to its price. Let us study it with the help of an example.

Price per unit of commodity X	Quantity demanded by consumer A (Q_A)	Quantity demanded by consumer B (Q_B)	Market Demand $Q_A + Q_B$
100	50	70	120
200	40	60	100

300	30	50	80
400	20	40	60
500	10	30	40

The above schedule shows the market demand for commodity X. When the price of the commodity is ₹100, customer A demands 50 units while the customer B demands 70 units.

Thus, the market demand is 120 units. Similarly, when its price is ₹500, Customer A demands 20 units while customer B demands 30 units.

Thus, its market demand decreases to 40 units. Thus, we can conclude that whether it is the individual demand or the market demand, the law of demand governs both of them.

Market Demand Curve

It is a graphical representation of the market demand schedule. The X-axis represents the market demand in units and Y-axis represents the price of a commodity.

Supply

Supply

The supply schedule (or supply curve) for a commodity shows the relationship between its market price and the amount of that commodity that producers are willing to produce and sell, other things being constant.

A firm sell 1000 units of a commodity at Rs 10 per unit. Its price elasticity of supply is 3. Number of units the firm will offer for sale if price falls to Rs 7.5 will be

Friends, please don't get confused with Price Elasticity of Demand. In Price Elasticity of Demand, when the price is increased, the quantity demanded will be decreased. But in Price Elasticity of supply, when the price is increased, quantity supplied will be increased. Because, the supplier will supply more quantity of item when the price is increased.

Let us solve this one.

Price Elasticity of supply = percentage change in quantity supplied/percentage change in price

$$\begin{aligned}
 3 &= \frac{((1000-x) \cdot 100 / 1000)}{((10-7.5) \cdot 100 / 10)} \\
 &= \frac{((1000-x) / 10)}{(2.5 \cdot 10)} \\
 &= \frac{((1000-x) / 10)}{25} \\
 75 &= (1000-x) / 10 \\
 750 &= 1000-x \\
 x &= 1000-750 \\
 &= 250
 \end{aligned}$$

Forces behind the supply Curve

- Cost of Production
- Prices of inputs and technological advances
- Government Policy
- Prices of related goods
- Special Factors like weather influence on farming and agro-industry

Supply Schedule

- It is a statement in the form of a table that shows the different quantities of a commodity that a firm or a producer offers for sale in the market at different prices.
- It denotes the relationship between the supply and the price, while all non-price variables remain constant.

There are two types of Supply Schedules:

- Individual Supply Schedule
- Market Supply Schedule

Individual Supply Schedule

- It is a supply schedule that depicts the supply by an individual firm or producer of a commodity in relation to its price. Let us understand it with the help of an example.

Price per unit of commodity X (Px)	Quantity supplied of commodity X (Dx)
100	1000
200	2000
300	3000
400	4000
500	5000

- The above schedule depicts the individual supply schedule. We can see that when the price of the commodity is ₹100, its supply is 1000 units. Similarly, when its price is ₹500, its supply increases to 5000 units.

- Thus, we can conclude that as the price falls the supply decreases and as the price rises the supply also increases. Hence, there exists a direct relationship between the price and quantity supplied.

Individual Supply Curve

- It is a graphical representation of the individual supply schedule. The X-axis represents the supply and Y-axis represents the price of a commodity. There exists a direct relationship between price and quantity supplied of a commodity.

Market Supply Schedule

- It is a summation of the individual supply schedules and depicts the supply of different customers for a commodity in relation to its price. Let us understand it with the help of an example.

Price per unit of commodity X	Quantity supplied by firm A (Q_A)	Quantity supplied by firm B (Q_B)	Market Supply $Q_A + Q_B$
100	1000	3000	4000
200	2000	4000	6000
300	3000	5000	8000
400	4000	6000	10000
500	5000	7000	12000

- The above schedule shows the market supply of commodity X. When the price of the commodity is ₹100, firm A supplies 1000 units while the firm B supplies 3000 units.
- Thus, the market supply is 4000 units. Similarly, when its price is ₹500, firm A supplies 5000 units while firm B supplies 7000 units. Thus, it's market demand increases to 12000 units.
- Thus, we can conclude that whether it is the individual supply or the market supply, the law of supply governs both of them.

Market Supply Curve

- It is a graphical representation of the market supply schedule. The X-axis represents the market supply in units and Y-axis represents the price of a commodity.

Important Point

- Supply increases (or Decreases) when the amount supplied increases (or Decreases) at each market price.
- **Supply and demand interacts** to produce equilibrium price and quantity or market equilibrium.
- **The Market Equilibrium** comes at that price and quantity where the forces of supply and demand are in balance.
- **At the Equilibrium price**, the amount that buyers want to buy is just equal to the amount that sellers want to sell.
- **A Market equilibrium** comes at the price at which quantity demanded equals quantity supplied.
- The Equilibrium Price is also called as the **Market Clearing Price**.

Unit 3- Money Supply and Inflation

Money

Money is anything which performs the following four functions:

Medium of exchange: Individual goods and services; and other physical assets, are 'priced' in terms of money and are exchanged using money.

A measure of value: Money is used to measure and record the value of goods or services.

A store of value over time: Money can be held over a period of time and used to finance future payments.

Standard for deferred payments: Money is used as an agreed measure of future receipts and payments in contracts.

Money Supply

Money supply refers to the stock of money available in the economy at a given point of time. Money supply data are recorded and published by the RBI on a **fortnightly basis**. Money supply affects the price level, exchange rates and business cycles in the economy. It may also affect the growth of GDP. The ratio between nominal GDP and money supply is called "**Velocity of Money**".

Measures of Money supply

There are four common measures of Money supply, commonly used in India:

- Narrow Money (M1)= Currency with Public Demand Deposits with Banking System + ‘Other’ Deposits with the RBI
- M2 = M1+ Savings deposits of Post Office Savings Banks
- M3 = M1+ Time Deposits with the Banking System
- M4 = M3+ All Deposits with post office savings banks (Excluding NSCs)

Currency with Public = Currency in circulation - Cash held by banks.

Demand Deposits include all liabilities which are payable on demand and they include current Deposits, demand liabilities portion of saving Banks Deposits, margins held Against LC/BG, Balance in OD FDs, Cash Certificates and Cumulative/RDs etc.

“**Time Deposits**” are those which are payable otherwise than on demand and they include fixed Deposits, Cash Certificates, Cumulative and recurring Deposits, time Liabilities portion of savings bank deposits, etc.



Inflation

The concept of Inflation refers to a **sustained rise** in the **general level of prices of goods and services in an economy over a period of time.**

Causes of Inflation

Demand – pull Inflation: Demand – pull Inflation is a rise in general prices caused by increasing aggregate demand for goods and services.

Cost- Push Inflation: Cost- Push Inflation is a type of inflation caused by substantial increases in the cost of production of important goods of services, where no suitable alternative is available.

Measure of Inflation:

Calculating inflation with Price Indexes

Inflation = (Price Index in Current Year–Price index in Base Year) X 100/Price index in Base Year

There are Important Price Indexes

- Wholesale Price Index (WPI)
- Consumer Price Index (CPI)
- GDP Deflator

Wholesale Price Index (WPI)

Wholesale Price Index, or WPI, measures the changes in the prices of goods sold and traded in bulk by wholesale businesses to other businesses. WPI is unlike the Consumer Price Index (CPI), which tracks the prices of goods and services purchased by consumers. What do you mean by the Wholesale Price Index? To put it simply, the WPI tracks prices at the factory gate before the retail level.

New series of WPI

With an aim to align the index with the base year of other important economic indicators such as GDP and IIP, the base year was updated to 2011-12 from 2004-05 for the new series of Wholesale Price Index (WPI), effective from April 2017.

How do you calculate Wholesale Price Index?

The monthly WPI number shows the average price changes of goods usually expressed in ratios or percentages.

The index is based on the wholesale prices of a few relevant commodities available.

The commodities are chosen based on their significance in the region. These represent different strata of the economy and are expected to provide a comprehensive WPI value.

The advanced base year 2011-12 adopted recently uses 697 items.

Consumer Price Index

Consumer Price Index or CPI as it is commonly called is an index measuring retail inflation in the economy by collecting the change in prices of most common goods and services used by consumers. Called market basket, CPI is calculated for a fixed list of items including food, housing, apparel, transportation, electronics, medical care, education, etc. Note that the price data is collected periodically, and thus, the CPI is used to calculate the inflation levels in an economy. This can be further used to compute the cost of living. This also provides insights as to how much a consumer can spend to be on par with the price change.

Remember, CPI is different from WPI, or Wholesale Price Index, which measures inflation at the wholesale level.

How is Consumer Price Index calculated?

The CPI is calculated with reference to a base year, which is used as a benchmark. The price change pertains to that year. Remember, when you calculate the CPI, note that the price of the basket in 1 year has to be first divided by the price of the market basket of the base year. Then, it is multiplied by 100.

Consumer Price Index formula:

CPI = (Cost of basket divided by Cost of basket in the base year) multiplied by 100

CPI's annual percentage change is also used to assess inflation. In India, the base years of the current series of CPI(IW), CPI(AL) and CPI(RL), are 1982, 1986-87 and 1984-85, respectively.

GDP Deflator

GDP deflator is a measure of the level of prices of all new, domestically produced, final goods and services in an economy.

Unit 4: Theories of Interest

Interest

Interest is a payment made by a borrower for the use of a sum of money for a period of time.

Three elements can be distinguished in interest:

- **Payment for the risk involved in making the loan**
- **Payment for the trouble involved**
- **Pure interest, i.e. a payment for the use of money.**

Keynes' Liquidity Preference Theory of Rate of Interest

- J M Keynes in his book "**The General Theory of Employment, Interest and Money**" views that the rate of interest is purely **monetary phenomenon and is determined by Demand for money and supply of money.**
- J M Keynes theory is known as "**Liquidity Preference Theory**"
- Rate of interest and bond prices are **inversely related.**
- Money Demand curve follows from above that quantity of **money demanded increases with the fall in the rate of interest or with the increase in level of nominal income.**
- The rate of interest is determined **by demand for money (Liquidity Preference) and supply of money – JM Kenes.**

The position of money demand curve depends upon two factors:

1. **The level of nominal income and**
2. **The expectation about the changes in bond prices in the future which implies change in rate of interest in future.**

IS and LM curves Theory promulgated by Sir Hon Richard Hicks and Alvin Hansen

Renowned Economists, Sir John Richard Hicks and Alvin Hansen, have brought about a synthesis between the classical and Keynes' theories of interest and have thereby succeeded in propounding an adequate and determinate theory of interest. **This involves 3 steps:**

- Using Classical Theory to derive a curve called IS Curve.
- Using Keynes's Theory to derive a curve called LM Curve.
- Combining IS and LM Curves.

The IS curve and the LM curve relate the two variables

- **Income and**
- **the rate of interest**

LM= **Liquidity preference and Money supply equilibrium**. LM curve is derived from **Keynes Liquidity preference theory of interest**.

Unit 5: Business Cycles

Business Cycles

- The term Business cycle **refers to economy-wide fluctuations in production or economic activity over several months or years.**
- Business Cycle is also known as **Economic Cycle**.
- Business Cycle simply means **the whole course of business activity which passes through the phases of prosperity and depression.**
- A business Cycle is **not a regular, predictable, or repetitive phenomenon** like the swing of the pendulum of a clock. Its timing is random and, to a large degree, unpredictable.

Characteristics of a Business Cycle:

- A business cycle is synchronic
- A business cycle show a wave like movement
- Cyclical fluctuations are recurring in nature
- There can be no indefinite depression or eternal boom period
- Business cycles are pervasive in their effects.

- The up and down movements are not symmetrical. The Downward movement is more sudden and violent than the upward movement.

Phases of Business Cycle:

A business cycle is identified as a sequence of four phase. **Boom, Recession, Depression and Recovery**

Boom:

- During the Boom phase production capacity is fully utilized and also products fetch an above normal price which gives higher profit.
- In Boom period, consumption will be decreased as prices are going up.
- The Demand is more or less stagnant or it even decreases.

Recession:

- A downward tendency in demand is observed. The supply exceeds demand
- Desire for liquidity increases all around.
- Producers are compelled to reduce price so that they can find money to meet their obligations.
- This Phase of the business cycle is known as the Crisis.

Depression:

- Underemployment of both men and materials is a characteristic of this phase. General Demand falls faster than production
- Volume of Production will be reduced.
- The demand for the bank credit is at its lowest which results in idle funds.
- The interest rates are decline regime.

Recovery:

- Depression phase does not continue indefinitely.
- Wages will be paid low.
- Prices are at the lowest, the consumers, who postponed their consumption expecting a still further fall in price, now start consuming.
- As demand increases, the stocks of goods become insufficient.

Unit 6: Indian Economy & Various Sectors of the Economy

Indian Economy

Economy till 2008

In the First five Decades of the 20th Century, till we got our independence in 1947, the per capita GDP in India was stagnant. The Trend growth in GDP during this **period was 0.9% with Population growing by about 0.8%**.

- **Period 1950-1980= 3.5%**
- **Period 1980- 2000=6%**
- **Period 2000-2008= 7.2% to 8.8%**

Economy after 2008

The Global financial crisis of 2008 affected the Indian economy also. Despite various measures taken by RBI and the Indian govt, the growth rate started declining.

2009-10= 7.1%

2010-11= 6.8%

2011-12 = 6.5%

2012-13 = 5.1%

2013-14= 6.6%

2014-15= 7.2%

2015-16=7.9%

2016-17= 7.1%

2017-18=7.6%

Various Sectors of the Economy

Indian economy is classified in three main sectors:

Agriculture and allied activities (Forestry & Logging, fishing and relative activities)

Industry (Manufacturing, electricity, Gas, Water supply and Construction)

Services (Trade, repairs, hotels and Restaurants, Transport storage, communication & Services related to broadcasting, financial, real estate & professionals services, Community, social & personal services.)

Agriculture and allied activities: This sector includes forestry and fishing also. This sector is also known as the primary sector of the economy. At the time of Indian independence, this sector had the biggest share in the Gross Domestic Product of India. But year by year its contribution goes on declining and currently, **it contributes only 17% of Indian GDP at current prices as compared to 21.7% in 2003-04.** It is worth to mention that the agriculture sector provides jobs to around 53% population of India.

Industry Sector: This sector includes 'Mining & quarrying', Manufacturing (Registered & Unregistered), Gas, Electricity, Construction, and Water supply. This is also known as the **secondary sector of the economy.** Currently, it is **contributing around 29.6 % of the Indian GDP (at current prices) in 2018-19.**

Services Sector: Services sector includes 'Financial, real estate & professional services, Public Administration, defence and other services, trade, hotels, transport, communication and services related to broadcasting. This sector is also known as the **tertiary sector of the economy.** Currently, this sector is the **backbone of the Indian economy and contributing around 54.3% of the Indian GDP in 2018-19.**

The share of various sectors in Gross Value Added (GVA) during last three years is given in the table below. (updated upto Dec. 2018):source:-PIB

Share of sectors in GVA at current prices (%)			
Sector	2015-16 (2nd RE)	2016-17 (1st RE)	2017-18 (PE)
Agriculture, forestry & fishing	17.7	17.9	17.1
Industry	29.8	29.3	29.1
(Of which) Manufacturing	16.8	16.8	16.7
Services	52.5	52.8	53.9
Source: Central Statistics Office; Notes: 2nd RE: Second Revised Estimates			

Unit 7: Economic Reforms

Important Point

- The economic Reforms started **in 1991.**

- Real Sector Policy measures mainly focused on **the manufacturing sector in the early stages of reform process.**
- MRTP Act **Monopolies and Restrictive Trade Practices Act, 1969**
- APMC Act (**Agricultural Produce Market Committee Act**)
- The primary objective of The **APMC Act in each state of India requires all agricultural products to be sold only in government - regulated markets.** This was amended and permitting the farmers to bypass the mandatory requirement of regulated market.
- Essential Commodities Act, **1955**

Important Committee related Reforms

Financial Sector reforms have been arrived out in accordance with there commendations made by basically three committees:

- **Narasimham Committee** report on **financial sector Reforms (1992)**
- **Narasimham Committee** report on **Banking sector Reforms (1998)**
- **S H Khan Report (1998)** of the working group for harmonize the role and **operations of Development Financial Institutions and Banks reforms in financial Sector**

Some Important Definition

- **IRS- Interest Rate Swaps:** An interest rate swap is an interest rate derivative. It involves exchange of interest rates between two parties.
- **FRA - Forward Rate Agreements:** A Forward Rate Agreement (FRA) is a financial contract between two parties to exchange interest payments for a 'notional principal' amount on settlement date.
- **Collateralized Borrowings and Lending Obligation (CBLO):** The Collateralized Borrowing and Lending Obligation (CBLO) market is a money market segment operated by the Clearing Corporation of India Ltd (CCIL). In the CBLO market, financial entities can avail short term loans by providing prescribed securities as collateral. In terms of functioning and objectives, the CBLO market is almost similar to the call money market.
- **CDs (Certificate of Deposits)** are short-term borrowings in the form of Usance Promissory Notes having a maturity of **not less than 15 days up to a maximum of one year.**
- **Commercial Paper (CP)** is an unsecured money market instrument issued in the form of a promissory note.
- **Who can issue Commercial Paper (CP)?:** Highly rated corporate borrowers, primary dealers (PDs) and satellite dealers (SDs) and all-India financial institutions (FIs).
- **A 'Future' is a contract to buy or sell the underlying asset for a specific price at a predetermined time.** If you buy a futures contract, it means that you promise to pay the price of the asset at a specified time. If you sell a future, you effectively make a promise to transfer the asset to the buyer of the future at a specified price at a particular time. Every futures contract has the following features:
 - Buyer
 - Seller
 - Price
 - Expiry

- Some of the most popular assets on which futures contracts are available are equity stocks, indices, commodities and currency.
- **Basis:** The difference between the price of the underlying asset in the spot market and the futures market is called '**Basis**'. (As '**spot market**' is a market for immediate delivery)
- **The Payment and Settlement Systems Act, 2007** empowering the RBI to regulate and supervise payments and settlement system.
- **Cheque Truncation System(CTS):** Cheque Truncation System or Image-based Clearing System, in India, is a project of the Reserve Bank of India, commenced in 2010, for faster clearing of cheques.
- G Sec is market auction related instruments and they are paid by **Ways and Means Advances, automatic monetization.**
- Poverty is measured by **Gini Coefficient**, a standard measure of Income/Expenditure in equality
- The Gini coefficient, invented by the Italian statistician Corrado Gini, is a **number between zero and one that measures the degree of inequality in the distribution of income in a given society**. The coefficient would register zero (0.0 = minimum inequality) for a society in which each member received exactly the same income and it would register a coefficient of one (1.0= maximum inequality) if one member got all the income and the rest got nothing

Derivatives

Futures and options represent two of the most common form of "Derivatives".

- **Derivatives** are financial instruments that derive their value from an 'underlying'. The underlying can be a **stock issued by a company, a currency, Gold etc.**
- The derivative instrument can be **traded independently of the underlying asset.**
- The value of the derivative **instrument changes according to the changes in the value of the underlying.**

Derivatives are of two types –

1. Exchange traded and
2. Over the counter.

Exchange traded derivatives

- As the name signifies are traded through organized exchanges around the world. These instruments can be bought and sold through these exchanges, just like the stock market.
- Some of the common exchange traded derivative instruments are futures and options.

Over the counter (popularly known as OTC)

- Derivatives are not traded through the exchanges. They are not standardized and have varied features.
- Some of the popular OTC instruments are **forwards, swaps, swaptions** etc.

Options

- **Options:** Options contracts are instruments that give the holder of the instrument the right to buy or sell the underlying asset at a predetermined price.
- An option can be a '**call**' option or a '**put**' option.

Call

- A call option gives the buyer, the **right to buy the asset at a given price**. This 'given price' is called '**strike price**'. It should be noted that while the holder of the **call option** has a right to **demand sale of asset from the seller**, the **seller has only the obligation and not the right**. For e.g.: if the buyer wants to buy the asset, the seller has to sell it. He does not have a right.

Put

- A '**put**' option gives the buyer a right to sell the asset at the '**strike price**' to the buyer. Here the **buyer has the right to sell and the seller has the obligation to buy**.

Foreign Investment

Foreign investment is of two kinds – (i) **Foreign Direct Investment (FDI)** and (ii) **Foreign Portfolio Investment**.

Foreign Direct Investment (FDI)

- 'FDI' means investment **by non-resident entity/person resident outside India in the capital** of the Indian company under **Schedule 1 of FEM** (Transfer or Issue of Security by a Person Resident outside India) Regulations 2000.

Foreign Portfolio Investment

- Portfolio investment in both **primary and secondary market by FII was opened up in 1992**.
- foreign portfolio investment is the entry of funds into a country where foreigners deposit money in a country's bank or make purchases in the country's stock and bond markets, sometimes for speculation.

External commercial borrowing

ECB

- Source of funds for corporate from abroad with advantage of

- lower rates of interest prevailing in the international financial markets
- longer maturity period
- for financing expansion of existing capacity as well as for fresh investment

About

- **ECB** is Defined as to include commercial loans [in the form of bank loans, buyers' credit, suppliers' credit, securitized instruments (e.g. floating rate notes and fixed rate bonds, CP)] availed from non-resident lenders with minimum average maturity of 3 years

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Unit 8: Monetary Policy and Fiscal Policy

Monetary Policy

Monetary Policy is the process by which the Government, Central Bank controls

- The money supply

- Availability of money
- Cost of money or rate of interest

In order to attain a set of objective oriented towards the growth and stability of the economy. Monetary policy is referred to as either being **expansionary policy or a contractionary policy**.

Expansionary policy

- An expansionary policy increases the total supply of money in the economy. This is used to combat unemployment in a recession by lowering interest rates.

Contractionary policy

- A contractionary policy decreases the total money supply. This is used to combat inflation by raising the interest rates.

Tools of Monetary policy:

- Bank Rate
- Cash Reserve Ratio
- Statutory Liquidity Ratio
- Market Stabilization Scheme
- Repo Rate
- Reverse Repo Rate
- Open Market Operations

Bank Rate

It is also referred as Discount rate, is the rate of interest which a central bank charges on the loans and advances that it extends to commercial banks and other financial intermediaries.

Bank Rate as an instrument of Monetary policy has been very limited in India because of these basic factors:

1. The Structure of interest rates is not automatically linked to the bank rate
2. Commercial banks enjoy specific refinance facilities, and not necessarily rediscount their eligible securities with RBI at Bank rate
3. The bill market is under-developed and the different sub-markets of the money market are not influenced by the bank rate.

Cash Reserve Ratio (CRR):

- The present banking system is called a “**Fractional Reserve Banking System**, as the banks are required to keep only a fraction of their deposit liabilities in the form of liquid cash with the central bank for ensuring Safety and liquidity of deposits.
- **CRR was introduced in 1950** primarily as a measure to ensure safety and liquidity of bank deposits.
- This **minimum ratio** (that is the part of the total deposits to be held as cash) is **stipulated by the RBI and** is known as the CRR or Cash Reserve Ratio.

Statutory Liquidity Ration (SLR):

- **SLR refers to the amount that all banks requires maintaining in cash or in the form of Gold or approved securities.** Approved securities mean dated securities, government bonds, and share of different companies.
- The SLR is determined as % of **Total Demand and Time Liabilities**

Note: The maximum limit of SLR is 40% and minimum limit of SLR is 0 In India

Demand Liabilities

- Demand Liabilities' include all liabilities which are payable on demand and they include current deposits, demand liabilities portion of savings bank deposits, margins held against letters of credit/guarantees, balances in overdue fixed deposits, cash certificates and cumulative/recurring deposits, outstanding Telegraphic Transfers (TTs), Mail Transfer (MTs), Demand Drafts (DDs), unclaimed deposits, credit balances in the Cash Credit account and deposits held as security for advances which are payable on demand. Money at Call and Short Notice from outside the Banking System should be shown against liability to others.

Time Liabilities.

- Time Liabilities are those which are payable otherwise than on demand and they include fixed deposits, cash certificates, cumulative and recurring deposits, time liabilities portion of savings bank deposits, staff security deposits, margin held against letters of credit if not payable on demand, deposits held as securities for advances which are not payable on demand and Gold Deposits.

Market Stabilization Scheme:

- RBI introduced Market Stabilization Scheme after consulting GOI for mopping up liquidity of a more enduring nature. Under this scheme, the **GOI issue existing instrument, such as Treasury Bills/ and or dated securities** by way of auctions under the MSS, in addition to the normal borrowing requirements, for absorbing liquidity form the system.

Repo Rate:

- **Repo (Repurchase) rate is the rate at which RBI lends short-term money** to the banks. Bank lending rates are determined by the movement of Repo Rate.

Reverse Repo Rate:

- **Reverse Repo Rate** is the rate at which banks park their **short term excess liquidity with the RBI**. The RBI uses this tool when it feels there is too much money floating in the Banking System.
- An **Increase in Reverse Repo means** that the **RBI will borrow money from the Banks at a higher rate of interest**, so banks would prefer to keep their money with the RBI.

Open Market Operations:

- Under this, RBI buys or sells government bonds in the secondary market. By absorbing bonds, it drives up bond yields and injects money into the market. When it sells the bonds, it done so to such the money out of the system.

Refinance Facilities: RBI Provide Sector- specific refinance facilities aimed at achieving **sector specific objectives through provision of liquidity at a cost linked** to the policy repo rate.

Liquidity Adjustment facility (LAF): It consists of **overnight and term repo/** reserve repo auctions.

Term Repos: Since October 2013, The RBI has introduced term repos (of different tenors, such as, **7/14/28 days**), **to inject liquidity over a period that is longer than overnight**. The aim of term repo is to help develop inter-bank money market.

Marginal Standing Facility (MSF): It is a special window for banks to borrow from RBI against approved government securities in an emergency situation like an acute cash shortage. MSF rate is higher then Repo rate.

RBI's monetary policy's objectives:

- Monitor the global and domestic economic conditions and respond swiftly as required.
- Ensure higher bank credit expansion to achieve higher growth but at the same time protect the credit quality
- Maintain price stability and financial stability
- Give thrust on Interest Rate Management, Inflation Management and Liquidity Management.

Fiscal Policy

- In economics and political science, **fiscal policy** is the **use of government revenue collection and expenditure to influence a country's economy**.

- Fiscal policy can be contrasted with the other main type of economic policy, monetary policy, which attempts to stabilize the economy by controlling interest rates and supply of money. **The two main instrument of fiscal policy are government spending and taxation.** Changes In the level and composition of taxation and government spending can have impact on the following variable in the economy.
 1. Aggregate demand and the level of economic activity
 2. The pattern of resources allocation
 3. The distribution of income
- Fiscal Policy is the use of government spending and revenue collection the economy. Fiscal Policy refers to the overall effect of the budget outcome on economic activity.

FRMB Act

- **Fiscal Responsibility and Budget Management Act - 2003.** Dr E A S Sharma Committee January, 2000 recommended draft legislation on fiscal responsibility.

FRBM requirements are

- The Government to place before Parliament 3 statement each year along with Budgets, Covering Medium Term Fiscal Policy, Fiscal Policy Strategy and Macroeconomic Framework
- Center to reduce the fiscal deficit (Generally 3% of GDP) and more categorically to “Eliminate revenue deficit’ by 31-03-2008. Government to set a ceiling on guarantee (0.5% o GDP)
- Act prohibits the Center form borrowing from the RBI, i.e. it bans ‘Deficit financing’ through money creation. The RBI is also barred from subscribing to primary issues of Central Government Securities.
- The Finance Minister is required to keep Parliament informed through quarterly review on the implementation, and to take corrective measure.
- The main theme of the FRBM Act is to reduce the dependence of the Government on borrowings and help to reduce the fiscal deficit in a phased manner.

Unit 9: GDP Concepts

GDP Concepts

- **Gross Domestic Product (GDP):** It is the total market value of all the final goods and services produced within the territorial boundary of a country, using domestic resources, during a given period of time, usually 1 year.
- **Gross national Income at Market Price** = GDP at Market Price + Taxes less subsidies on production and imports (net receivable from abroad + Compensation of Employees (Net Receivables from abroad) + Property income (Net receivables from abroad)
- **Gross National Product (GNP)** = GDP + Total Capital gains from overseas investment (-) income earned by foreign nationals domestically

$GNP = GDP + NR$ (Net Income from assets abroad (Net Income Receipts))

GDP Computation

According to the National Income Accounting, there are **three ways to compute GDP:**

- Expenditure wise
- Income wise
- Product wise

Expenditure Method

$GDP = \text{Consumption} + \text{Gross Investment} + \text{Government Spending} + (\text{Exports} - \text{Imports})$ $GDP = C + I + G + (X - M)$

- **Consumption:** This included personal expenditures pertaining to food, households, medical expenses, rent, etc
 - **Gross Investment :** Business Investment as capital which includes construction of a new mine, purchase of machinery and equipments for a factory, purchase of software, expenditure on new houses, buying goods and services but investments on financial products is not included as it falls under savings.
 - **Government spending:** It is the sum of government expenditures on final goods and services.
1. **Exports:** This includes all goods and services produced for overseas consumptions.
 2. **Imports:** This includes any goods or services imported for consumption and it should be deducted to prevent from calculating foreign supply as domestic supply.

Income Approach

GDP from the income is the sum of the following major components:

1. Compensation of employees
2. Property income
3. Production taxes and depreciation on capital

- **Compensation of Employees:** It represents wages, salaries and other employee supplements.
- **Property Income:** It constitutes corporate profits, proprietor's income, interests and rents.
- **GDP at market price** measures the value of output at market prices after adjusting for the effect of indirect taxes and subsidies on the prices. Market price is the economic price for **which a good or service is offered in the market place.**
- **GDP at factor cost** measures the value of **output in terms of the price of factors used in its production.**
- $\text{GDP at factor cost} = \text{GDP at Market Price} - (\text{Indirect taxes} - \text{Subsidies})$

Product Approach

In India we have getting **GDP product wise belongs to 8 sectors.**

- **Real GDP or GDP at constant price:** It means the value of today's output at yesterday price. Real GDP is calculated by tracking the volume or quantity of production after removing the influence of changing prices or inflation.
- **Normal GDP or GDP at Current prices:** It represents the total money value of final goods and services produced in a given year, where the values are expressed in terms of the market prices of each year.
- **Factors of production are :** Land, Labour, Capital and Entrepreneur

Basic Concept of National Income

Net Domestic Product (NDP):

- $\text{NDP} = \text{GDP} - \text{Depreciation}$
- $\text{GDP} = \text{NDP} + \text{Depreciation}$

Gross National Product (GNP):

- $\text{GNP} = \text{GDP} + \text{NFIA}$ (Net factor income from abroad)
- $\text{GDP} = \text{GNP} - \text{NFIA}$

Net National Product (NNP):

- $\text{NNP} = \text{GNP} - \text{Depreciation}$

Net Domestic Product (NDP):

- $\text{NDP} = \text{NNP} - \text{NFIA}$
- $\text{NNP} = \text{NDP} + \text{NFIA}$

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Unit 10: Union Budget

Union Budget

The annual budget of the country is called the Union Budget.

- Revenue Concept
- Expenditure Concept
- Deficit Concept

Receipts

Revenue Receipts

Tax Revenue

Gross Tax Revenue

- Corporation tax
- Income tax
- Other Taxes & Duties
- Customs
- Union Excise Duties
- Service Tax
- Taxes of the Union Territories

Net Tax Revenue = Gross Tax Revenue (-) NCCD transferred to the National Calamity Contingency fund (-) States' share

Total Non- Tax Revenue

- Interest Receipts
- Dividend and Profits
- External Grants
- Other Non-Tax Revenue
- Receipts of Union Territories

Total Revenue Receipts = Net Tax Revenue + Total Non- Tax revenue

Capital Receipts = Non- debt receipts + Debt Receipts

Non- debt Receipt

- Recoveries of loans & Advances
- Miscellaneous Capital receipts

Debt Receipts

- Market Loans
- Short Term Borrowings
- External Assistant (Net)

- Securities issued against small saving
- State provident funds (Net)
- Other Receipts (Net)

Expenditure

Non- Plan Expenditure

Non- Plan Expenditure = Revenue Non- Plan Expenditure + Capital Non-plan Expenditure

Revenue Expenditure

- Interest Payments and Prepayment Premium
- Defence
- Subsidies
- Grants to state and U.T govt.
- Pension
- Police
- Assistance of states from national calamity contingency fund
- Economic Services (Agri, Industry, Power, Transport, technology etc)
- Social Services (Education, health, broadcasting etc)
- Postal Deficit
- Grants to foreign govt.

Capital Expenditure

- Defence
- Other Non-plan capital Outlay
- Loans to Public Enterprises
- Loan to state and U.T govt.
- Loans to foreign govt.

Plan Expenditure

- Central Plan

- Central Assistance for State & U.T Plans
- **Plan Expenditure** = Revenue Expenditure + Capital Expenditure
- **Total Expenditure** = Total Non-plan Expenditure + Total Plan Expenditure

Deficit Concepts

- **Revenue Deficit** is the excess of revenue expenditure over revenue receipts.
- **Financing of Fiscal Deficit:** Debt Receipts + Draw-down of cash balance
- **Gross Fiscal Deficit** is the excess of total expenditure including loans, net of recoveries over revenue receipts (including external grants) and non- debt receipts
- **Net Fiscal deficit** = The gross fiscal deficit (-) interest payments
- **Net Primary deficit** = Net fiscal deficit (-) net interest payments
- **NCCD:** National Council on Crime and Delinquency.

Unit 11: Challenges Facing Indian Economy

Unique features of Indian Economy

- India's growth is driven by domestic demand – both consumption and investment.
- Twin Deficit – Fiscal & Current Account
- Supply constrained economy

Concerns

The Major Concerns, facing the Indian Economy, are as under:

- **First Concern:** Achieving and Sustaining higher growth
- **Second Concern:** Expediting the process of economic reforms
- **Third Concern:** Attaining financial stability
- **Fourth Concern:** Improving the Infrastructure
- **Fifth Concern:** Tackling issues like Human development, financial inclusion etc.

Module B: Business Mathematics

Index

Unit 1	Time Value of Money
Unit 2	Sampling Methods
Unit 3	Correlation and Regression
Unit 4	Time Series
Unit 5	Estimation
Unit 6	Bond Investment
Unit 7	Linear Programming
Unit 8	Simulation

Unit 1: Time Value of Money

Present Value

Present value (PV) is the current value of a future sum of money or stream of cash flows given a specified rate of return. Future cash flows are discounted at the discount rate, and the higher the discount rate, the lower the present value of the future cash flows.

The formula for present value is:

Present Value Formula


Present Value (PV) = $\frac{C}{(1 + r)^n}$


- $PV = CF/(1+r)^n$
- CF = cash flow in future period
- r = the periodic rate of return or interest (also called the discount rate or the required rate of return)
- n = number of periods

Example:

Assume that you would like to put money in an account today to make sure your friend has enough money in 5 years to buy a bike. If you would like to give your child 660000 in 5 years, and you know you can get 10% interest per year from a savings account during that time, how much should you put in the account now?

$$PV = 660000 / (1 + .10)^5 = 409808.073/-$$

Future Value

The value of an asset or cash at a specified date in the future that is equivalent in value to a specified sum today. It refers to a method of calculating how much the present value (PV) of an asset or cash will be worth at a specific time in the future. There are two ways to calculate FV:

- **For an asset with simple annual interest:** = Original Investment x (1+(interest rate*number of years))
- **For an asset with interest compounded annually:** = Original Investment x ((1+interest rate)^number of years)

Example:

1) 20,000 invested for 10 years with simple annual interest of 5% would have a future value of

$$\begin{aligned} FV &= 20000(1+(0.05*10)) \\ &= 20000(1+0.5) \end{aligned}$$

$$= 20000 \times 1.5$$

$$= 30000$$

2) 20,000 invested for 10 years at 5%, compounded annually has a future value of :

$$FV = 20000(1+0.05)^{10}$$

$$= 10000(1.05)^{10}$$

$$= 32577.8926$$

Annuities

An annuity is a series of payments made at equal intervals. Examples of annuities are **regular deposits to a savings account, monthly home mortgage payments, monthly insurance payments and pension payments**. Annuities can be classified by the frequency of payment dates.

- **Ordinary Annuity:** Payments are required at the end of each period. For example, straight bonds usually pay coupon payments at the end of every six months until the bond's maturity date.
- **Annuity Due:** Payments are required at the beginning of each period. Rent is an example of annuity due. You are usually required to pay rent when you first move in at the beginning of the month, and then on the first of each month thereafter.

Present Value of an Annuity

The present value an annuity is the sum of the periodic payments each discounted at the given rate of interest to reflect the time value of money.

$$PV \text{ of an Ordinary Annuity} = R (1 - (1 + i)^{-n})/i$$

$$PV \text{ of an Annuity Due} = R (1 - (1 + i)^{-n})/i \times (1 + i)$$

Where,

i is the interest rate per compounding period;

n are the number of compounding periods; and

R is the fixed periodic payment.

Example :

1. Calculate the present value on Jan 1, 2018 of an annuity of 10,000 paid at the end of each month of the calendar year 2018. The annual interest rate is 24%.

Solution

We have,

$$\text{Periodic Payment } R = 10,000$$

$$\text{Number of Periods } n = 12$$

$$\text{Interest Rate } i = 24\%/12 = 2\%$$

Present Value

$$PV = 10000 \times (1 - (1 + 2\%)^{-12})/2\%$$

$$= 10000 \times (1 - 1.02^{-12})/2\%$$

$$= 10000 \times (1 - 0.7885)/2\%$$

$$\begin{aligned}
 &= 5000 \times 0.11255/2\% \\
 &= 5000 \times 21.15 \\
 &= 105,750
 \end{aligned}$$

Net Present Value

The net present value or net present worth applies to a series of cash flows occurring at different times. The present value of a cash flow depends on the interval of time between now and the cash flow. It also depends on the discount rate. NPV accounts for the time value of money. **These three possibilities of net present value are briefly explained below:**

- **Positive NPV:** If present value of cash inflows is greater than the present value of the cash outflows, the net present value is said to be positive and the investment proposal is considered to be acceptable.
- **Zero NPV:** If present value of cash inflow is equal to present value of cash outflow, the net present value is said to be zero and the investment proposal is considered to be acceptable.
- **Negative NPV:** If present value of cash inflow is less than present value of cash outflow, the net present value is said to be negative and the investment proposal is rejected.

Net present value method

Net present value method (also known as **discounted cash flow method**) is a popular capital budgeting technique that takes into account the time value of money. It uses net present value of the investment project as the base to accept or reject a proposed investment in projects like purchase of new equipment, purchase of inventory, expansion or addition of existing plant assets and the installation of new plants etc.

To be at Net Present Value you also need to subtract money that went out (the money you invested or spent):

- Add the Present Values you receive
- Subtract the Present Values you pay

Example

Company A is considering a new piece of equipment. It will cost Rs. 6,000 and will produce a cash flow of Rs. 1,000 every year for the next 12 years (the first cash flow will be exactly one year from today).

What is the NPV if the appropriate discount rate is 10%?

You can either discount each individual cash flow or recognise that the Rs. 1,000 cash flows are just a twelve year annuity. So,

$$\begin{aligned}
 PV &= a/i [1 - 1/(1+i)^n] \\
 PV &= 1,000/0.1 [1 - 1/(1.1)^{12}] \\
 PV &= \text{Rs. } 6,814
 \end{aligned}$$

Adding this to the original investment gives an NPV of

NPV = Rs. 6,814 - Rs. 6,000

NPV = Rs. 814

Unit 2: Sampling Methods

Sampling

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken **from a larger population**. The methodology used to sample from a larger population depends on the type of analysis being performed.

Types of sampling

There are two methods of selecting from populations

- Non- random or judgement sampling
- Random or probability sampling

Random Sampling

A probability sampling method is any method of sampling that utilizes some form of **random selection**. In order to have a random selection method, you must set up some process or procedure that assures that the different units in your population have equal probabilities of being chosen.

Type of Random Sampling

There are four main type of random sampling

1. Simple Random Sampling (SRS)
2. Stratified Sampling
3. Cluster Sampling
4. Systematic Sampling

- **Simple Random Sampling (SRS):** Simple Random Sampling selects samples by methods that allow each possible sample to have an equal probability of being picked and each item in the entire population to have an equal chance or being included in the sample.
- **Systematic Sampling:** In systematic sampling, elements are selected from the population at a uniform level that is measured in time, order, or space. If we wanted to interview every twentieth student on a college campus, we would choose a random starting point in the first twenty names in the student directory and then pick every twentieth name thereafter.

- **Stratified Sampling:** To use stratified sampling, we divide the population into relatively homogenous groups, called strata. **Then we use one of two approaches.** Either we select at random from each stratum a specified number of elements corresponding to the proportion of that stratum in the population as a whole or we draw an equal number of elements from each stratum and give weight to the results according to the stratum's proportion of total population.
- **Cluster Sampling:** In cluster sampling, we divide the population into groups or clusters and then select a random sample of these clusters. We assume that these individual clusters are representative of the population as a whole. If a market Research team is attempting to determine by sampling the average number of television sets per household in a large city, they could use a city map and divide the territory into blocks and then choose a certain number of blocks (clusters) for interviewing. Every household in each of these blocks would be interviewed. A well designed cluster sampling procedure can produce a more precise sample at considerably less cost than that of simple random sampling.

Sampling distribution

A sampling distribution is a **probability distribution of a statistic obtained from a larger number of samples drawn from a specific population.** The sampling distribution of a given population is the distribution of frequencies of a range of different outcomes that could possibly occur for a statistic of a population.

Standard Error

Standard deviation of the distribution of the sample means is called the standard error of the mean.

Numerical on Sampling

Q1. A sack contains 3 pink balls and 7 green balls. What is probability to draw one pink ball and two green balls in one draw?

- (a) $\frac{23}{40}$
 (b) $\frac{21}{40}$
 (c) $\frac{27}{40}$
 (d) $\frac{9}{20}$
 (e) $\frac{21}{38}$

Ans(b)

Out of $(3+ 7) = 10$ balls, three (one pink & two green) balls are expected to be drawn

So, required probability = $\frac{{}^3C_1 \times {}^7C_2}{{}^{10}C_3}$

$$\begin{aligned} &= \frac{\frac{3}{1} \times \frac{7}{2 \times 1}}{10} \\ &= \frac{3 \times 2 \times 1}{3 \times 2 \times 1} \\ &= \frac{120}{21} \\ &= \frac{40}{7} \end{aligned}$$

Q2. A sack contains 4 black balls 5 red balls. What is probability to draw 1 black ball and 2 red balls in one draw?

- (a) 11/19
- (b) 10/21
- (c) 12/22
- (d) 19/11

Ans: B

Solution :

Out of 9, 3 (1 black & 2 red) are expected to be drawn)

Hence sample space

$$\begin{aligned} n(S) &= 9C3 \\ &= 9! / (6! \times 3!) \\ &= 362880 / 4320 \\ &= 84 \end{aligned}$$

Now out of 4 black ball 1 is expected to be drawn hence

$$\begin{aligned} n(B) &= 4C1 \\ &= 4 \end{aligned}$$

Same way out of 5 red balls 2 are expected to be drawn hence

$$\begin{aligned} n(R) &= 5C2 \\ &= 5! / (3! \times 2!) \\ &= 120 / 12 \\ &= 10 \end{aligned}$$

Then $P(B \cup R) = \frac{n(B) \times n(R)}{n(S)}$

i.e $4 \times 10 / 84 = 10 / 21$

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Unit 3: Correlation and Regression

Correlation Analysis

Correlation analysis is applied in quantifying the association between two continuous variables, for example, an dependent and independent variable or among two independent variables.

Regression Analysis

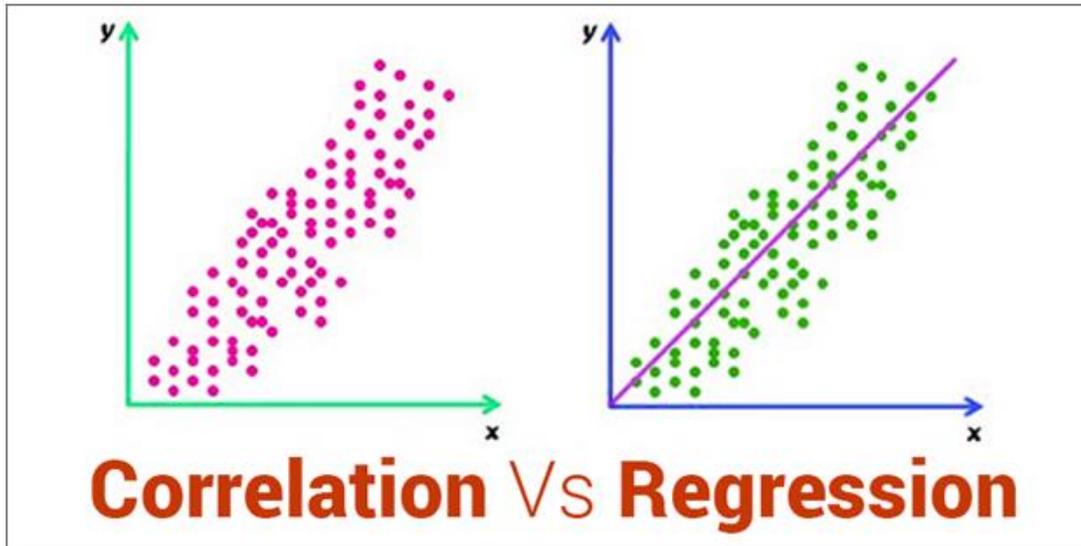
Regression analysis refers to assessing the relationship between the outcome variable and one or more variables. The outcome variable is known as the dependent or response variable and the risk elements, and cofounders are known as predictors or independent variables. **The dependent variable is shown by “y” and independent variables are shown by “x” in regression analysis.**

Linear Regression

Linear regression is a **linear approach to modelling the relationship between the scalar components and one or more independent variables.** If the regression has one independent variable, then it is known as a simple linear regression. If it has more than one independent variables, then it is known as multiple linear regression. Linear regression only focuses on the conditional probability distribution of the given values rather than the joint probability distribution. In general, all the real

world regressions models involve multiple predictors. So, the term linear regression often describes multivariate linear regression.

Correlation and Regression Differences



There are some differences between Correlation and regression.

- Correlation shows the quantity of the degree to which two variables are associated. It does not fix a line through the data points. You compute a correlation that shows how much one variable changes when the other remains constant. When r is 0.0, the relationship does not exist. When r is positive, one variable goes high as the other goes up. When r is negative, one variable goes high as the other goes down.
- Linear regression finds the best line that predicts y from x , but Correlation does not fit a line.
- Correlation is used when you measure both variables, while linear regression is mostly applied when x is a variable that is manipulated.

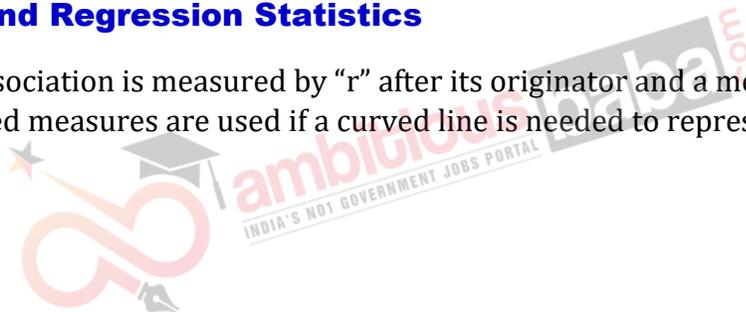
Comparison Between Correlation and Regression

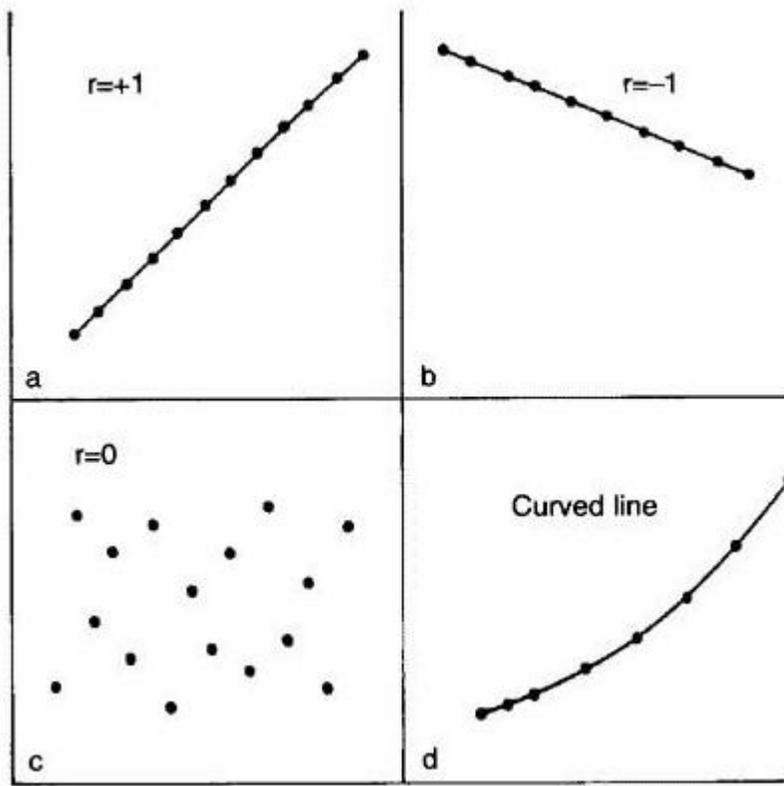
Basis	Correlation	Regression
Meaning	A statistical measure that defines co-	Describes how an independent variable is

	relationship or association of two variables.	associated with the dependent variable.
Dependent and Independent variables	No difference	Both variables are different.
Usage	To describe a linear relationship between two variables.	To fit the best line and estimate one variable based on another variable.
Objective	To find a value expressing the relationship between variables.	To estimate values of a random variable based on the values of a fixed variable.

Correlation and Regression Statistics

The degree of association is measured by “r” after its originator and a measure of linear association. Other complicated measures are used if a curved line is needed to represent the relationship.





The above graph represents the correlation.

The coefficient of correlation is measured on a scale that varies from **+1 to -1 through 0**. The **complete correlation among two variables is represented by either +1 or -1**. The correlation is positive when one variable increases and so does the other; while it is negative when one decreases as the other increases. The absence of correlation is described by 0.

Correlation Coefficient Formula

If X and Y are two variables, correlation coefficient ' r ' is computed as below:

$$r = \frac{\text{cov}(X, Y)}{\sigma_x \sigma_y}$$

where $\text{cov } X, Y = \frac{1}{N} \sum (x - \bar{x})(y - \bar{y})$

$\text{cov}(X, Y)$ is called the covariance between X and Y .

N is the total number of observations.

\bar{x} , \bar{y} are the means and σ_x , σ_y are the standard deviations of the variables.

$$\bar{x} = \sum x / N; \bar{y} = \sum y / N$$

$$\sigma_x = \sqrt{\frac{\sum (x - \bar{x})^2}{N}}$$

$$\sigma_y = \sqrt{\frac{\sum (y - \bar{y})^2}{N}}$$

Correlation Coefficient can also be calculated using the formula:

$$r = \frac{N \sum xy - (\sum x)(\sum y)}{\left(\sqrt{N \sum x^2 - (\sum x)^2} \right) \left(\sqrt{N \sum y^2 - (\sum y)^2} \right)}$$

Export x	Import y	x ²	y ²	xy
42	56	1764	3136	2352
44	59	1936	3481	2596
58	53	3364	2809	3074
55	58	3025	3364	3190
69	65	7921	4225	5785
98	78	9604	6084	7644
66	58	4356	3364	3828
Σx = 452	Σy = 427	Σx ² = 31940	Σy ² = 26463	Σxy = 28469

$$\bar{x} = \frac{452}{7} = 64.57; \bar{y} = \frac{427}{7} = 61$$

$$r = \frac{\left(\frac{28469}{7} - 64.57 * 61\right)}{\left(\sqrt{\frac{31940}{7} - 64.57^2}\right) * \left(\sqrt{\frac{26463}{7} - 61^2}\right)}$$

$$r = \frac{(4067 - 3938.77)}{\left(\sqrt{4562.86 - 4169.28}\right) * \left(\sqrt{3780.42 - 3721}\right)}$$

$$r = \frac{(128.23)}{(19.84 * 7.71)}$$

$$r = \frac{128.23}{152.97}$$

Simple Linear Regression Equation

As we know, linear regression is used to model the relationship between two variable. Thus, a simple linear regression equation can be written as:

$$Y = a + bX$$

Where,

Y = Dependent variable

X = Independent variable

$$a = \frac{[(\Sigma y)(\Sigma x^2) - (\Sigma x)(\Sigma xy)]}{[n(\Sigma x^2) - (\Sigma x)^2]}$$

$$b = \frac{[n(\Sigma xy) - (\Sigma x)(\Sigma y)]}{[n(\Sigma x^2) - (\Sigma x)^2]}$$

Unit 4: Time Series

Time Series

Secular trend is caused by basic inherent factors. Business cycle trends are mostly upward. The quality of forecast depends on the information provided by past data and its validity. **Data or statistical information accumulated** at regular intervals is called **TIME SERIES**.

There are 4 types of variations in time series.

- Secular Trend
- Cyclical Fluctuation
- Seasonal Variation
- Irregular Variation.

Secular Trend

In this first type of variation the change comes over a long period of time. A steady increase in cost of living recorded by Consumer Price Index is a good example. From year to year there is a fluctuation but there is a steady increase in the trend. Let us see the series given here. Let us try to detect patterns in the information over regular intervals of time. Then let us try to predict to cope with uncertainty.

Year	1997	1998	1999	20W	2001	2002	2003
Number	98	105	116	119	135	156	177

Observations

There is an increase over time of 7 years. But the increases are not equal.

Cyclical Fluctuation

Most common example of a cyclical fluctuation is a business cycle. Over time, there are years when business cycle hits peak above the trend line. There are also times when business activity slumps, and hits a point below the trend line. Fluctuations in business activity occur many times, and they have irregular periods and vary widely in amplitude from cycle to cycle. The time between hitting peaks and lows are periods – it can be one or many. The cyclical moves do not follow any regular pattern, they are irregular.

Seasonal Variation

There is a pattern of change within a year. A doctor can expect the number of flu cases to increase in winter. Hill resorts can expect more tourists during summer. These are regular patterns and can be used

for forecasting the amount of flu vaccines required during winter, the doctor's income during winter, the hotel bookings in resorts and availability of air and train bookings.

Irregular Variation

The value of the variable is unpredictable, changing in a random manner. The effects of earthquakes, floods, wars, etc., cannot be predicted.

As a result of flood, the agriculture output suffers. Then the prices go up at an unprecedented rate. This could not be predicted by using time series.

Even though we described time series as exhibiting one or another variation, in most instances real time series will contain several of these components. Then the question is how to measure them.

Trend Analysis

There are three main reasons, why we should study the trends:

- We will be able to describe historical patterns, which will help us to evaluate the success of previous policies – long-term direction of the time series is given by secular trend.
- Past trends will help us to project the future – some growth rate of population, GDP.
- We will be able to separate the trend component and eliminate it from the series, to get an accurate idea of other components like seasonal fluctuations.

Cyclical variation

Cyclical variation is a component of the time series, which tends to oscillate above and below the secular trend line for periods longer than a year. Seasonal variation makes a complete regular cycle within each year and does not affect one year any more than another. Once we identify the secular trend, we can isolate the remaining cyclical and irregular components of the trend. Let us assume cyclical component explains most of the variations left unexplained by the trend analysis.

Seasonal Variation

Time series also includes seasonal variation. Seasonal variation is repetitive and predictable.

This can be defined as movements around the trend line in one year or less. In order to measure seasonal variations, time intervals must be measured in small units, like days, weeks, etc.

Irregular Variation

The final component is irregular variation. After we have eliminated trend, cyclical and seasonal variations from the time series, we may still have unpredictable factor left. Irregular variations occur over **very short intervals and follow random patterns. We may not be able to isolate them mathematically**, but we may isolate the causes for the same. For example, an unusually very cold winter in a region may increase electricity consumption significantly. Wars may increase air and train

travel because of the movement of troops. We may not be able to identify all causes. But over time, these random variations tend to correct themselves.

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Unit 5: Estimation

Estimates

Estimation refers to the process by which one makes inferences about a population, based on information obtained from a sample.

We can make **two types of estimates** about a population: **a point estimate and an interval estimate.** A point estimate is a single number that is used to estimate an unknown population parameter. If, while watching a cricket team on the field, you say, 'Why, I bet they will get 350 runs,' you have made a point estimate. A department head would make a point estimate if she said, 'Our current data indicate that this course will have 350 students next year.'

Point estimate

A point estimate is often insufficient, because it is either right or wrong. If you are told only that her point estimate of enrollment is wrong, you do not know how wrong it is, and you cannot be certain of the estimate's reliability. If you learn that it is off by only 10 students, you would accept 350 students as a good estimate of future enrollment. But if the estimate is off by 90 students, you would reject it as an estimate of future enrollment. Therefore, a point estimate is much more useful if it is accompanied by an estimate of the error that might be involved.

Interval estimate

An interval estimate is a range of values used to estimate a population parameter. It indicates the error in two ways: by the extent of its range and by the probability of the true population parameter lying within that range. In this case, the department head would say something like, 'I estimate that the enrollment in this course next year will be between 330 and 380 and that it is very likely that the exact enrollment will fall within this interval.' She has a better idea of the reliability of her estimate. If the course is taught in sections of about 100 students each, and if she had tentatively scheduled five sections, then on the basis of her estimate, she can now cancel one of those sections and offer an elective instead.

Estimator

A sample statistic that is used to estimate a population parameter is called an estimator.

Criteria of a Good Estimator

Some statistics are better than others. Fortunately, we can evaluate the quality of a statistic as an estimator by using four criteria:

- **Unbiased:** This is a desirable property for a good estimator to have. The term unbiased refers to the fact that a sample mean is an unbiased estimator of a population mean because the mean of the sampling distribution of sample means taken from the same population is equal to the population mean itself.
- **Efficiency:** Another desirable property of a good estimator is that it be efficient. Efficiency refers to the size of the standard error of the statistic.
- **Consistency:** A statistic is a consistent estimator of a population parameter if as the sample size increases, it becomes almost certain that the value of the statistic comes very close to the value of the population parameter.
- **Sufficiency:** An estimator is sufficient if it makes so much use of the information in the sample that no other estimator could extract from the sample additional information about the population parameter being estimated.

Relationship between Confidence Level and Confidence Interval

- You may think that we should use a high confidence level, such as 99 per cent, in all estimation problems. After all, a high confidence level seems to signify a high degree of accuracy in the estimate. In practice, however, high confidence levels will produce large confidence intervals, and such large intervals are not precise; they give very fuzzy estimates.

- There is a direct relationship that exists between the confidence level and the confidence interval for any estimate. As you set a tighter and tighter confidence interval, you would get to a lower and lower confidence level.

Confidence Intervals

Statisticians use a **confidence interval** to express the precision and uncertainty associated with a particular sampling method. A confidence interval consists of three parts.

- A confidence level.
- A statistic.
- A margin of error.

The confidence level describes the uncertainty of a sampling method. The statistic and the margin of error define an interval estimate that describes the precision of the method. The interval estimate of a confidence interval is defined by the *sample statistic \pm margin of error*.

For example, suppose we compute an interval estimate of a population parameter. We might describe this interval estimate as a 95% confidence interval. This means that if we used the same sampling method to select different samples and compute different interval estimates, the true population parameter would fall within a range defined by the *sample statistic \pm margin of error* 95% of the time.

Confidence intervals are preferred to point estimates, because confidence intervals indicate (a) the precision of the estimate and (b) the uncertainty of the estimate.

Confidence Level

The probability part of a confidence interval is called a **confidence level**. The confidence level describes the likelihood that a particular sampling method will produce a confidence interval that includes the true population parameter.

Here is how to interpret a confidence level. Suppose we collected all possible samples from a given population, and computed confidence intervals for each sample. Some confidence intervals would include the true population parameter; others would not. A 95% confidence level means that 95% of the intervals contain the true population parameter; a 90% confidence level means that 90% of the intervals contain the population parameter; and so on.

Margin of Error

In a confidence interval, the range of values above and below the sample statistic is called the **margin of error**.

For example, suppose the local newspaper conducts an election survey and reports that the

independent candidate will receive 30% of the vote. The newspaper states that the survey had a 5% margin of error and a confidence level of 95%. These findings result in the following confidence interval: We are 95% confident that the independent candidate will receive between 25% and 35% of the vote.

Note: Many public opinion surveys report interval estimates, but not confidence intervals. They provide the margin of error, but not the confidence level. To clearly interpret survey results you need to know both! We are much more likely to accept survey findings if the confidence level is high (say, 95%) than if it is low (say, 50%).

Consider the following results of 10 tosses of a coin: H, T, T, T, T, H, T, H, T, T a) Estimate the probability of head (H) for this coin. b) Estimate the standard error of your estimate.

Let X denote the toss of a single coin. Further, let $X = 1$ if a head results, and $X = 0$ if a tail results. This X is a Bernoulli (p) random variable, where p denotes the probability of head. Let \hat{p} denote the estimator of p .

- a) The estimated value of p is $\hat{p} = (1 + 0 + 0 + \dots + 1 + 0 + 0)/10 = 0.3$.
 b) The estimated standard error of \hat{p} is $\sqrt{\hat{p}(1 - \hat{p})/n} = \sqrt{0.3(0.7)/10} = 0.14$.

Suppose the following data shows the number of the problems from the Practice Problems Set attempted in the past week by 10 randomly selected students: 2, 4, 0, 7, 1, 2, 0, 3, 2, 1.

- a) Find the sample mean.
 b) Find the sample variance.
 c) Estimate the mean number of practice problems attempted by a student in the past week.
 d) Estimate the standard error of the estimated mean.

- a) $\bar{X} = \sum_{i=1}^n X_i/n = (2 + 4 + \dots + 2 + 1)/10 = 2.2$
 b) $S^2 = \sum_{i=1}^n (X_i - \bar{X})^2/(n - 1) = (2 - 2.2)^2 + (4 - 2.2)^2 + \dots + (2 - 2.2)^2 + (1 - 2.2)^2/(10-1) = 4.4$
 c) The estimate is $\bar{X} = 2.2$
 d) Estimated standard error of \bar{X} is $S/\sqrt{n} = \sqrt{4.4/10} = 0.66$

Unit 6: Bond Investment

Debt

Debt is a sum of money borrowed by one entity, namely the borrower from another entity, namely the lenders. Due to the unavailability of liquid cash, Governments, corporations (big and small) and individuals often raise debts to make payments for varied purposes.

For instance, an organization may borrow from a bank or raise money from other sources to fund its working capital requirements. Another instance is a student purchasing an education loan from a bank to fund his/her education. This is a form of contract which allows the borrower to borrow money with the condition that the money is to be paid back at a later date (specified in the agreement), with added interest.

Governments raise debts to cover their deficit finances **which help pay for ongoing activities as well as major capital projects**. This debt may be **issued in the form of loans or by issuing bonds**.

Bonds

Bond is a debt security, in which the authorized issuer owes the holders a debt and, depending on the terms of the bond, is obliged to pay interest (the coupon) to use and/or to repay the principal at a later date, termed maturity. A bond is a formal contract to repay borrowed money with interest at fixed intervals (ex semi annual, annual, sometimes monthly).

Bonds provide the borrower with external funds to finance long-term investments, or, in the case of government bonds, to finance current expenditure. Bonds and stocks are both securities, but the major difference between the two is that (capital) stockholders have an equity stake in the company (i.e., they are owners), whereas bondholders have a creditor stake in the company (i.e., they are lenders). Another difference is that bonds usually have a defined term, or maturity, after which the bond is redeemed, whereas stocks may be outstanding indefinitely.

- **Face Value:** Also known as the par value and stated on the face of the bond. It represents the amount borrowed by the firm, which it promises to repay after a specified period.
- **Coupon rate:** A bond carries a specific rate of interest, which is also called as the coupon rate.
- **Maturity:** A bond is issued for a specified period. It is to be repaid on maturity.
- **Redemption Value:** The value, which the bondholder gets on maturity, is called the redemption value. A bond is generally issued at a discount (less than par value) and redeemed at par.
- **Market Value:** A bond may be traded on a stock exchange. Market value is the price at which the bond is usually bought or sold in the market.

How Do Bonds Work?

Consider a government bond as an example. Suppose the Indian Government raised money by selling 6 per cent coupon, 2012 maturity, and Treasury bonds. Each bond has a face value of Rupees 1,000/-. Because the coupon rate is 6 per cent, the government makes coupon payments of 6 per cent of Rupees 1,000 or Rupees 60 each year. When the bond matures in July 2012, the government must pay the face value of the bond, Rupees 1000, in addition to the final coupon payment.

Suppose you have purchased this bond in the year 2009. If you plan to hold this bond till maturity, then the cash flow is shown on the time line below. The initial cash flow is negative and equal to the price you have to pay for the bond. Thereafter the cash flows

equal the annual coupon payment, until the maturity date. On maturity you receive the face value of the bond, Rupees 1,000, in addition to the final coupon payment.

Dealers and brokers quote the figures or the prices which prevail in the bond market. This is essentially part of the debt market and you can see the prices quoted on the National Stock Exchange or NSE in the papers. Details such as the rate of interest, the year of maturity, price are reported in NSE website/ financial papers. A sample of some such trades is given as follows:

Bond details	Coupon	Price	YTM (%)
GS-CG-2011	6.57	101.40	5.3274
GS-CG-2012	7.40	101.9690	6.4881
GS-CC-2020	6.35	91.28	7.6069

Bond Prices and Yields

In this example we examined the cash flows for a 6 per cent treasury bond. How much would you be willing to pay for this stream of cash flows? To find out we have to compare with the interest rate on similar securities prevailing at that point in time. Let us presume the interest rate on three year maturities offer a return of 5.6 per cent. Thus we use this rate as the discount rate to value the cash flows from the bond.

$$\begin{aligned}
 PV &= 60/(1+r) + 60/(1+r)^2 + 1060/(1+r)^2 \\
 &= 60/1.056 + 60/(1.056)^2 + 1060/(1.056)^3 \\
 &= 56.82 + 53.80 + 900.15 \\
 &= 1010.77
 \end{aligned}$$

Bond Prices are usually quoted as a percentage of their face value. Thus we can say that our 6 per cent treasury bonds are worth 101.077 per cent of face value, and its price would usually be quoted as 101.077.

As you can notice that the coupon or interest payments on bonds and debentures are an annuity. In other words, the holder of our 6 per cent treasury bond receives a regular stream of Rupees 60 for three years. Thus we can also use the annuity formula to value the coupon payments and then add on the present value of the final payment or final face value.

$$PV = PV (\text{Coupons}) \text{ plus } PV (\text{face value})$$

= PV (A, r, n) plus PV (face value)

=PV (60, 0.056,3) plus PV(1000)

= $60 \times 0.177584 / 0.056 \times 1.177584$ plus 1000 divided by 1.177584 is equal to 10.65504 divided by 0.0659447 plus 849.19

=161.58 plus 849.19 is equal to 1010.77

If we need to value a bond of many years to run before maturity, it is usually better to use the annuity formula and separate the coupon or interest payments from the face value.

Bond Prices and Interest Rates

As interest rates change, so do bond prices. For example, suppose that investors demanded an interest rate of 6 per cent on 3 year Treasury bonds. What would be the price of the Treasury bond valued earlier? Just repeat the last calculation with a discount rate of r is equal to 0.06

PV at 6% = $60 / 1.06 + 60 / (1.06)^2 + 1060 / (1.06)^3$

=56.60+53.40+890

=1000

Thus when the interest rate is the same as the coupon rate (6% in our example), the bond sells for its face value.

Now if, we discount the cash flows at a rate higher than the bond's coupon rate, the bond is worth less than its face value. Let us see the following example.

Investors will pay Rupees 1,000 for a six per cent 3 year Treasury bond, when the interest rate is 6 per cent. Suppose that the interest rate is 10% when coupon is 6%. Now what is the value of the bond? We just repeat our initial calculation but with r is equal to 0.10

PV, 10% = $60 / 1.10 + 60 / (1.10)^2 + 1060 / (1.10)^3$

=54.55+49.60+796.40

=900.55

The bond sells for 90.055 per cent of face value.

We conclude that

When the market interest rate exceeds the coupon rate, bonds sell for less than face value;

When the market interest rate is below the coupon rate, bonds sell for more than face value.

Yield-To-Maturity of Bond

It is the rate of return earned by an investor, who purchases a bond and holds it until the maturity.

Numerical problems on YTM

Consider a Rs. 1,000 par value bond, whose current market price is Rs. 850/-. The bond carries a coupon rate of 8 per cent and has the maturity period of nine years. What would be the rate of return that an investor earns if he purchases the bond and holds until maturity?

Solution

If k_d is the yield to maturity then,

$$850 = 80 (PVIFA\ k_d\ \text{per cent},\ 9\ \text{yrs}) + 1,000 (PVIF\ k_d,\ 9\ \text{yrs})$$

To calculate the value of k_d , we have to try several values:

$$= 80 (PVIFA\ 12\ \text{per cent},\ 9) + 1,000 (PVIF\ 12\ \text{per cent},\ 9)$$

$$= 80 \times 5.328 + 1,000 \times (0.361)$$

$$= 426.24 + 361 = 787.24$$

Since, the above value is less than 850, we have to try with value less than 12 per cent. Let us try with $k_d = 10$ per cent

$$= 80 (PVIFA\ 10\ \text{per cent},\ 9) + 1,000 (PVIF\ 10\ \text{per cent},\ 9) = 80$$

$$\times 5.759 + 1,000 \times 0.424 = 884.72$$

From the above it is clear that k_d lies between 10% and 12%. Now we have to use linear interpolation in the range of 10% and 12%. Using it, we find that k_d is equal to the following:

$$(884.72 - 850) / (884.72 - 787.24)$$

$$34.72 / 97.48 = 10\% +$$

$$.71 = 10.71\%$$

Therefore, the yield to maturity is 10.71%

Unit 7: Linear Programming

This can be solved either 'graphical' or 'simplex' method.

Linear Programming refers to several related mathematical techniques that are used to allocate limited resources among competing demands in an optimum way.

Some examples of resource and marketing constraints:

- Bank may stipulate certain working capital requirements.

- Market may not absorb the whole output
- Capacity constraints
- Labor availability
- Raw Material availability

“Graphical’ Method

This method can be used where Z is function of 2 variables only as with increase in variables, the calculations become complicated.

The following steps are involved:

Step-1: formulate linear programming problem by restating the given information in mathematical form i.e. an equation for the objective function.

Step-2: plot the constraints on the graph.

Step-3: identify feasibility region and ascertain coordinates for its corner points.

Step-4: test which corner point is most suitable. Find a point in the permissible region as obtained in Step-3, that gives the optimum value of Z

‘Simplex’ Method

This technique also known as Simplex Algorithm is an iterative procedure (i.e. doing repetitively) for solving a linear programming problem in finite number of steps. The method is an algebraic procedure that progressively approaches the optimal solution. The method assumes that the variables are non-negative. The value of the objective function is increased at each step of iteration till further improvement is not possible. The method begins at the point of no production or zero solution. It involves the following steps:

Step-1: Write the program relating to the given. problem.

Step-2: To eliminate the inequalities add slack or surplus variable and rewrite the program.

Step-3: Determine the first basic feasible solution by starting at the origin (i.e. starting with zero solution)

Step-4: Write the initial simplex Tableau 1

Step-5: Calculate Z_j (which is inner product of c_j and x_i)

Step-6: Calculate $Z_j - C_j$ and select the greatest absolute value with negative sign in index row

Step-7: Highest number with negative sign determines the key column and also determines the Entering variables.

Step-8: Develop ratio column where $R = b_i / a_{ij}$ for the column of entering variables.

Step-9: Select the least, positive ratio (or value of R) and determine the exiting variables. The row containing the least positive ratio is the key row and variable corresponding to it is the exiting variable.

Step-10: Determine the key figure which is the number at the intersection of the key column and key row.

Step-11: Obtain new tableaus for entering variable, divide the figures in the row of leaving variable by key figure.

Step-12 Repeat the step 5 to 11, till no negative numbers exist in the index row.

Unit 8: Simulation

Simulation

Simulation is appropriate to situations where size and/or complexity of the problem make the use of other techniques difficult or impossible. For example, queuing problems have been extensively studied through simulation. Some types of inventory problems, layout and maintenance

problems also can be studied through simulation. Simulation can be used with traditional statistical and management techniques.

Simulation is useful in training managers and workers in how the real system operates, in demonstrating the effects of changes in system variables and real-time control. Simulation is extensively used in driving lessons. The person who learns driving is made to face the real road situations (traffic jams and other problems) during learning, so that serious accidents can be avoided. Simulation is commonly used in financial world such forex, investment and risk management areas.

Application of simulation methods:

- Air Traffic control queuing
- Aircraft maintenance scheduling
- Assembly line scheduling
- Inventory reorder design
- Railroad operations
- Facility layout
- Risk modeling in finance area.
- Foreign exchange market
- Stock market

Example:

The owner of an outlet wishes to evaluate his daily ordering policy. His current rule is order the demand of the previous day. But he has started thinking recently that he should follow better methods to decide the quantum of order.

He purchases milk at Rs 12 and sells at Rs 16. He orders his requirement at the end of the day and gets the milk in the morning. From past experience, the vendor assessed that his demand is between 30 and 80 liters per day.

He also kept a record of relative frequency of the quantity demanded during the last 10 days. Now he thinks of a new ordering rule — mean of quantity sold in the last 10 days.

He maintained the sales in a tabular form. The table has two columns. The first column shows the Demand and the second one shows the Relative frequency, that is, in the selected period of 10 days, how many times such demand occurred.

Demand per day in Litres	Relative Frequency
35	1/ 10, that is, only one day, out of ten days, demand of 35 litres occurred
45	3/10, that is, only three days, out of ten days, demand of 45 litres occurred
55	2 /10, that is, only two days, out of ten days, demand of 55 litres occurred
65	3/10, that is, only three days, out of ten days, demand of 65 litres occurred
75	1/10, that is, only one day, out of ten days, demand of 75 litres occurred

He settles for the ordering rule

$$[(35 \times 0.1) + (45 \times 0.3) + (55 \times 0.2) + (65 \times 0.3) + (75 \times 0.1)] = 55 \text{ litres.}$$

So we have 2 rules: Old rule and New rule. Representing mathematically,

Old rule = quantity demanded on previous day is equal to $D (n - 1)$.

New rule = Mean of the past 10 days is equal to 55

Now let us compare these orders in terms of profits.

Profit 'P' is equal to (Sold Quantity \times selling price (p)) - (Ordered quantity \times cost price (c)).

Assume that the unsold milk packets are thrown away as they are perishable. Now to prepare for simulation, we have to develop a method for demand generation. Let us use the probability distribution of demand and random numbers to generate a demand for the next 20 days.

Now arrange the chance process to generate occurrences in the system.

Demand Per Day	Relative Frequency	Probability	Random Number Interval
35	1/ 10	0.1	00 to 09
45	3/10	0.3	10 to 39
55	2/10	0.2	40 to 59
65	3/ 10	0.3	60 to 89
75	1/ 10	0.1	90 to 99

With the above table and random numbers, we develop the demand for 20 days.

Step 1: Choose a random number.

Step 2: Find the random number interval associated with the random number.

Step 3: Read the daily demand corresponding to the random number interval.

Step 4: Assume $D = 55$ litres for day 0

Step 5: Calculate the quantity sold. Quantity sold will be lesser of the demand D or Quantity ordered Q_1 (or Q_2)

Step 6: Profit = (Sold quantity \times selling price) - (Ordered quantity \times cost price).

Selling Price is Rs 16 per litre and cost price is Rs 12 per litre

Step 7: Do all steps for 20 days to simulate.

Day	RN (random number)	D (demand related to respective random number interval)	Q1 (quantity ordered based on demand of previous day)	S1 (quantity sold under old method) (lesser of D and Q1)	PR-1 (rupees) profit under old method (16 into S1)- (12 into Q1)	Q2 (quantity ordered) (mean of quantity sold in last ten days)	S2 (quantity sold under new method) (lesser of D and Q2)	PR-2 (rupees) profit under old method (16 into S1)- (12 into Q1)
0		55						
1	6	35	55	35	-100	55	35	-100
2	39	45	35	35	140	55	45	60
3	89	65	45	45	180	55	55	220
4	61	65	65	65	260	55	55	220
5	99	75	65	65	260	55	55	220
6	95	75	75	75	300	55	55	220
7	55	55	75	55	-20	55	55	220
8	35	45	55	45	60	55	45	60
9	57	55	45	45	180	55	55	220

10	59	55	55	55	220	55	55	220
11	30	45	55	45	60	55	45	60
12	81	65	45	45	180	55	55	220
13	2	35	65	35	-220	55	35	-100
14	18	45	35	35	140	55	45	60
15	87	65	45	45	180	55	55	220
16	68	65	65	65	260	55	55	220
17	28	45	65	45	-60	55	45	60
18	44	55	45	45	180	55	55	220
19	80	65	55	55	220	55	55	220
20	84	65	65	65	260	55	55	220
Total		1120	1110	1000	2680	1100	1010	2960
Average		56	55.5	50	134	55	50.5	148

We now see that the average demand according to simulation is 56 litres, Average sales is 50 litres, according to old method; and 50.5 litre according to new method. Average order is 55.50 litres under old method, whereas 55 hires under new method.

Thus you would find that profitability improves under the new method.

Simulation Methodology

START	Key factors
DEFINE PROBLEM	Define objectives and variables
CONSTRUCT THE SIMULATION MODEL	Specification of variables, parameters, decision rules, probability distribution and time incrementing procedure — (fixed or variable)
SPECIFY VALUES OF PARAMETERS & VARIABLES RUN THE SIMULATION	Determine starting conditions and run length
EVALUATE RESULTS	Determine statistical tests
PROPOSE NEW EXPERIMENT	Compare with other information
Stop	

Advantages

Mock Tests

Simulation is desirable when experiments on the real system

- Would disrupt ongoing activities;
- Would be too costly to undertake;
- Require many observations over an extended period of time;
- Do not permit exact replication of events; and
- Do not permit control over key variables.

Simulation is preferable when a mathematical model

- is not available to handle the problem;
- is too complex and arduous to solve;
- is beyond the capability of available personnel; and
- is not robust enough to provide information on all factors of interest.

Disadvantages

- Time consuming.
- Requires computer experience and expertise on the part of the user.
- Impossibility of quantifying and difficulty of casting complex problems in a format may cause difficulties; but simulations can be made to run under any type of assumption and these flaws can be overlooked.
- In spite of widespread applications, there are very few principles to guide the user in making decisions on what to include in the model and the length and number of simulation runs. This will be more like an art than science. The user has to use his intuitive judgments.

Module C: Human Resource Management

Index

Unit 1	Fundamentals of Human Resources Management
Unit 2	Development of Human Resources
Unit 3	Human Implications of Organisations

Unit 4	Employee Feedback and Reward System
Unit 5	Performance Management
Unit 6	HRM and Information Technology

Unit 1: Fundamentals of Human Resources Management

The Perspective

An appropriate beginning to understand the fundamentals of people management would be to **appreciate the foundations of an organization**. An organization is primarily a ramification of the fact that there is an interdependency implied in the satisfaction of needs of individuals alongside with the achievement of organizational objectives. An organization is coming together of individuals in order to attain a common goal/purpose.

- **Robert Owen (1771-1858):** Advocate of better working conditions for 'vital machines'
- **Charles Babbage (1792-1871):** Division of labour
- **Frederick Taylor (1856-1915):** Scientific Management Approach famous for his '**division of labour**' concept and '**time and motion**' studies and further substantiated by Gantt and Gilberths. Some of the major assumptions in this approach could be summarized as:
 1. The tasks can be broken down to simple units for people to understand and perform
 2. People will do a given activity in return for money
 3. People will have to do what is defined by the organization and in turn by technology.

Elton Mayo: Hawthorne Studies 1924-33

Pointed to various dimensions of human behaviour that were not considered to be of any significance in the restricted approach taken earlier

- Followed by Human relations movement that replaced 'rational-economic man' by 'social man' perspective

- Later researchers like Chris Argyris, Abraham Maslow, Douglas McGregor and Frederick Herzberg pointed out that individuals are motivated by other than monetary factors too

- Line managers are the delivery points

Development of People Management Functions

The history of management of people as a distinct managerial function goes back to the end of the nineteenth and the beginning of the twentieth century. With a significant increase in the number and size of organizational units as a sequel to the Industrial Revolution, there was a need to have special departments like finance, accounting, production, etc.

Few Organisations had the post of welfare secretary (also referred to as social secretaries)

- Experiment on group behaviour by Prof A K Rice in Ahmedabad Rice Mills in 1952
- The term personnel officer was perhaps first used in the chemical and pharmaceutical industries in 1960s
- The concern for human element did not occur until the socio-psychological upheavels in the late 1920s and early 1930s

- **Two major traditions or trends:**

- i) Hard headed, profit minded approach to utilisation of human resources
- ii) Social welfare viewpoint

Relationship between HRM & HRD and Their Structures and Functions

HRM is an essential branch of management that deals with making the optimum usage of organizational human resources by nurturing better work conditions for all concerned. On the other hand, **HRD is a branch of HRM that focuses on the growth and development of the workforce in any organization.**

Basis of Differentiation	HRM	HRD
Definition and full form	The full form of HRM is Human Resource Management. It refers to how the principles of management can be applied to manage the employees working in an organization effectively.	The full form of HRD is Human Resource Development. It refers to continuous development functions that are implemented for improving the performance of those working in an organization.

Mock Tests

Nature	HRM is a management function.	HRD is a sub-function of HRM.
Function	The functions of HRM are reactive and are usually applied to gaining holistic organizational goals.	The functions of HRD are proactive and have to be applied consistently to enhance the productivity of employees.
Goal	The objective of HRM is related to improving the overall performance of employees.	HRD goals are usually connected with skill development, knowledge enhancement, and increasing the competency of employees.
Process	Most HRM processes are routine and have to be carried out as and when the need arises.	HRD processes are ongoing and not occasional.
Dependency	HRM is an independent entity in itself. It comprises of different sections inclusive of recruitment and retention, HRD, compensation, performance, appraisal management, etc.	HRD is a subsystem of HRM and draws many functions, attributes, and processes from HRM.
Concerned with	HRM deals with and has concerns for people only. It handles recruitment, rewards, etc.	HRD is concerned with the development of all aspects and people within an organization and manages its skill development processes.
Levels of formality	HRM functions are generally formal and are applied via classroom/laboratory training, etc.	HRD functions may be informal as in mentorships, employees receive coaching from superiors, usually managers.

Role of HR Professionals

- **Supportive Role:** This relates to the strengthening of the operating and executive levels and consolidating the strengths in an organization.
- **Role of System Development and Research:** This pertains to developing systems that deal with people, their problems and organizational dynamics. This was already present in the traditional role.
- **Managerial role:** This relates to performing managerial functions like planning future manpower, recruiting, utilizing by placement, returning, motivating-

Mock Tests

integrating people and their role, performance and potential assessment, planning the growth of individuals, etc.

- **Role of Developing Competence:** This refers to developing technical, managerial, and processing competence among the human resource. The new perspective also includes helping and coping competence.
- **Process Role:** An effective organization needs to respond to the changing environment for which it has to develop coping skills. Creating necessary culture and values in the organization, diagnosing the problem at organizational level and taking corrective steps are the related responsibilities of the HR functionaries.

Technical

- Knowledge of performance appraisal systems and their functioning in various organizations
- Knowledge of potential appraisal and mechanism of developing a system
- Knowledge of various tests and measurements of behaviour
- Ability to design and coordinate training programmes at worker, supervisor and managerial levels.
- Professional knowledge of personnel and management
- Knowledge of behavioural sciences
- Understanding of overall organizational culture
- Knowledge of career planning, processes and practices
- Knowledge and skills in counselling
- Knowledge of techniques in behavioural research

Managerial

- Organizing ability
- Systems development skills

Personality

- Initiative
- Faith in human beings and their capabilities
- Positive attitude to others
- Imagination and creativity

Mock Tests

- Concern for excellence
- Concern for people and their development
- Friendly, sociable and affable
- Attitude for research and development work
- Interest in learning new things
- Ability to work as a team member

Strategic Role in the Future

- To become a partner with senior and line managers in strategy execution, helping to move planning from conference room to the market place.
- To become an expert in the way work is organized and executed, delivering administrative efficiency to ensure that costs are reduced while quality is maintained.
- To become a champion for employees, vigorously representing their concerns to senior management and at the same time, working to increase employee contribution.
- To become an agent of continuous transformation, shaping processes and a culture that together improve an organisation's capacity for change.

Development of HR functions in India

- During the British raj, the ripples of whatever happened were felt in India
- Labour Welfare Officers under the Factories Act
- By 1950s the provisions of the Industrial Disputes Act, 1947 began to percolate down
- By 1960s demand for personnel professionals with specific knowledge about people management systems and laws rose
- Institutes were setup
- Indian Institute of Personnel Management (IIPM), 1947
- National Institute of Labour Management
- National Institute of personnel Management (NIPM), 1982: Formed upon merger of the above two institutes
- Indian Society for Training and Development , 1970

Mock Tests

- MNCs gave more attention to personnel issues based on home country experience
- In India TISCO took proactive measures in the field
- Govt. enacted legislations related to employment and employee welfare:
- Article 16(1) of the Indian Constitution: Equal opportunity for employment
- Apprentices Act, 1961: Training linked to employment
- Child Labour Act, 1986
- Bonded Labour System Act, 1976
- Interstate Migrant Workmen Act, 1979
- Next major transformation in 1980s with the onset of the HRD era Establishment of National HRD network in 1985

Unit 2: Development of Human Resources

HRD

HRD and its subsystems

- Performance Appraisal
- Potential Appraisal
- Career Planning
- Training
- Organisational Development
- Rewards
- Counselling
- Quality Circle
- Role Analysis, and others.

Goals of HRD are to develop

- Capabilities of each employee as an individual
- Capabilities of each individual in relation to his or her present role
- Capabilities of each employee in relation to his or her expected future role(s)

Mock Tests

- Dyadic relationship between each employee and his/her supervisor
- Team spirit and functioning in every organisational unit (department, group etc)
- Collaboration among different units of the organization
- Organisation's overall health and self-renewing capabilities, which, in turn increase the enabling capabilities of individuals, dyad teams, and the entire organization

The typical systems developed to enhance achievement of these HRD goals include:

- Training and Development
- Performance Appraisal, Feedback and Counselling
- Potential Appraisal, Career Planning and Counselling
- Organizational Development
- Human Resource Information System

Job/Role Analysis

- **Job Description:** This simply records each and every component of the job which an individual has to perform in a given set-up.
- **Job Specifications:** On the basis of the job description a list of requirements is prepared in terms of educational qualification, age, work experience, specific knowledge, skills, expertise, temperament, etc.
- **Job evaluation:** This is primarily used to compare similarity between jobs within an organization or between organizations or even in an industry.
- **Task:** This is a basic element of a job and as such requires a person to achieve a specific product. In the process the individual is isolated from others.
- **Job:** This is a complex system of tasks requiring an individual to achieve an overall product and still making the relationship irrelevant.
- **Position:** Puts an individual in a hierarchical pattern, expecting those below to report or surrender to higher positions and conform to their expectations while those higher up may be led to exploit the relationship and demand conformity.
- **Role:** Emphasizes on the pattern of (mutual) expectations.
- **Work:** Involves a more complex pattern as it goes a step further to encompass socio- psychological relationship.

Training and Development – Role and Impact of Training

Mock Tests

Training and Development system as part of the HRD efforts and this involves:

- Identification of Training Need
- Designing the Training
- Conducting the training
- Evaluation of Training
- Selection and development of trainers

Purpose of Training and Development

- **Training** is for learning related to present job;
- **Education** is for learning to prepare the individual for a different but identified job; and
- **Development is learning** for growth of the individual not related to a specific present or future job.

Imperatives of Adult Learning

- It is interesting to note that though most of the people think that Adult Education is a recent phenomenon, but it is not so. In ancient times great teachers like Confucius, Lao Tse, Hebrew Prophets, Jesus, Socrates, Plato, Aristotle - were 'teachers of adults'. To these teachers 'learning was a process of active inquiry on the part of the learners'; they invented 'techniques for involving the learners in active inquiry.'

Learning Theories

- **Mechanistic or Behaviourist Theories:** These theories hold that the learner is passive in the process of learning. If one introduces an input (stimulus) into a human being, you will get a predetermined response. In other words, learning occurs only when a learner is conditioned to give the 'right' response to a given stimulus.
- **Cognitive Theories:** These theories equate man with his brain, based on the proposition that one thing that distinguishes human beings from other living things is that they possess brains that are capable of critical thinking and problem solving. The purpose of learning therefore is to teach the brain to engage in such critical thinking and problem solving.
- **Organismic or Humanistic Theories:** These theories hold that learning occurs only when learners have the 'freedom to learn' what is particularly relevant to

Mock Tests

their personal life situation. The purpose of learning is to encourage each individual to develop his or her full, unique potential.

There are theories related to the variables associated with the actual Teaching-Learning situation. Decenzo and Robbins (1995) list some as:

- **Learning is enhanced when the learner is motivated:** This means that the learning experience must be so organized that it should create desire to learn.
- **Learning requires feedback:** Knowledge of results is necessary for learner to improve upon his mistakes. The feedback also tends to act as motivator when the learner knows that he is proceeding in the right direction.
- **Reinforcement increases the likelihood that a learned behavior will be repeated:** Behavior that is positively reinforced are encouraged and therefore sustained.
- **Practice increases a learner's performance:** Learners need to practice what they learn.
- **Learning must be transferable to the job:** Learning a skill just for the sake of it will not work; it must be possible to apply what is learnt.

Systematic Approach to Training (SAT)

- Will the training to be done internally or externally? Does the organization have or intend to develop an in-house training centre?
- How much and what kind of training will be done externally and is this also an essential part?
- Who are the functionaries responsible for administering the training system?

SAT: The process

- **Step 1:** Training Need Analysis (TNA) and Identification of Training Needs
- **Step 2:** Preparation of a Training Plan;
- **Step 3:** Conduct of the training which includes designing the programme in terms of the time, duration, target group, sequence of inputs and methodology;
- **Step 4:** Evaluation of the Training Programmes and the Plan;
- **Step 5:** Selection and Development of Trainers.

Support systems for Training and Development

- Performance Appraisal System
- Human Resource Information System

- Organisational Culture

Attitude Development

The term '**attitude**' is frequently used to describe people in terms of their behaviour and its impact on behaviour. More precisely, an attitude can be defined as a persistent tendency to feel and behave in a particular way towards some object.

Components of Attitudes

Attitude can be broken down into three **basic components**, viz., **emotional, informational and behavioural**.

- **The emotional component** involves the person's feelings or their affect—positive, neutral or negative—about an object. Emotions play a very important role in organizational behaviour of employees. The expression of emotions, either positive or negative, is also important to work behaviour.
- **The information component consists** of beliefs and the information that an individual has about that object. Generally, the beliefs or the information are founded on insufficient observations or opinions which may not be empirically correct.
- **The behavioural component** consists of a person's tendency to behave in a particular way towards the object.

Attitudes serve four important functions in the process. These are:

- The Adjustment Function,
- The Ego-Defensive Function,
- The Value-Expression Function
- The Knowledge Function.

Changing Attitudes

Barriers to attitude change:

- Prior commitment to a particular thing
- Insufficient information

Overcoming the Barriers to attitude change:

- Use of Fear
- Provide New Information
- Resolving discrepancies between attitude and behaviour

Mock Tests

- Influence of peers, friends and opinion leaders Co-Opting – Getting the dissatisfied people involved in improvement process

Career Path Planning

It is relevant therefore, to examine the underlying concepts in the generic observation that:

- Individuals desire and expect change at certain stages in life:
- There is a (predictable) pattern in these changes; and
- There is a feeling of frustration if things do not happen as desired or expected.

Erikson the first stage in life adulthood is:

- **Adolescence:** In this stage individual's development is to achieve an ego identity. Individual is involved in reconciliation process of what he perceives himself to be, what he thinks others perceive him to be and make an adjusted assessment to form his identity.
- **Young Adulthood:** It is the next stage where he/she starts developing relationships with individuals, group or occupation. This could be establishing a close relationship, developing an interest group or a work group.
- **Adulthood:** The stage is that of guiding the next generation and during this stage one is passing on the knowledge, values or sponsoring the younger colleagues and in the Maturity: A stage when person attempts to achieve ego integrity by examining whether life has been meaningful or satisfying.

CAREER ROLES given by Dalton

- **Apprentice:** This is the beginning of the career. An individual does routine work under the supervision of the mentor, who helps to learn. At this stage the individual needs to accommodate himself to a certain degree of dependency.
- **Colleague:** This is the beginning of making an independent contribution though still in a subordinate role. There is less dependence on superiors for advice and direction.
- **Mentors:** This stage signifies the beginning of complex functions. The individual develops ideas, manages others, and must learn to assume responsibility for his subordinates' work.
- **Sponsors:** At this stage the individual needs to broaden his perspective and think long- term as he is now a part of the top management. He is required to define the direction in which the entire organization or at least a major segment of it would develop.

Career Concepts

- **Linear Career Concept:** Plan for upward movement within the same profession using organisational hierarchy
- **Steady State Career:** Individuals choose a profession, acquire higher skills, but do not choose to go higher up in the hierarchy
- **Transitory Pattern:** Individuals shift from one job to another not necessarily related to the previous one
- **Spiral Career:** Individuals take on a new job, work hard, perform well, move up in the status and rank, then move on to another type of work and follow the same pattern of development and performance
- **Plateau Career:** Reaching a level higher than where one started but then continuing on the same level

Career Anchors

This has three components:

- Self-perception of talents and abilities based on one's performance;
- Self-perceived motives and needs based on self-diagnosis and feedback; and
- Self-perceived attitudes and values based on interactions with the norms and values implicit in the organization.

Schein's Career Anchors

- **Technical or Functional Competence:** Some individuals 'fall in love' with a particular field or function. They desire to be outstanding in the field; their self-concept is associated with their skills in that area.
- **Managerial Competence:** Some individuals like to manage. Their early career experiences indicate to them that they will be able to rise in the management hierarchy.
- **Security:** Some individuals seek a secure work environment and career by tying themselves to a particular organization or geographical location.
- **Creativity:** There are some individuals who want to create something new. They like to start something and make it a success.
- **Autonomy:** Another group of individuals finds organizational life unpleasant or difficult. They prefer to maintain their freedom.

Career Path Planning System

Mock Tests

Main responsibilities of the organisation while developing and implementing a career plan are:

- The policy of career planning is made explicit. It lays down the benchmarks for performance at critical stages which the employees must attain
- It is made clear that the career path is a facility for growth and not a right for advancement
- The career path – a sequence of job assignments, training requirements and promotion to higher level – is made known to the employees from the time of entry. Performance feedback is a part of the career path
- The career path is followed uniformly for all employees without any bias/prejudices
- It should be flexible to accommodate variations which may be needed to deal with the given circumstances

Self Development

Self can be categorized into **two parts, namely, the 'patent self' and the 'inner self'**.

- The **patent self** can also be called the external self which normally comprise individual's identity and physical features.
- On the other hand the **'inner self'** signifies the behaviour patterns, values and other.

The self-development essentially refers to developing a mature personality who can handle different tasks and situations with comparative ease. and in this direction seeking self improvement becomes an ongoing process. It is the process of discovering and utilizing the tremendous potential within one's individual personality.

The context of our discussion on self- development in relation to the organization, the following aspects will be discussed.

At Individual level	<ul style="list-style-type: none">• Motivational Pattern• Locus of Control• Power Bases
At Interpersonal level	<ul style="list-style-type: none">• Interpersonal Needs• Transactional Analysis
At Group level	<ul style="list-style-type: none">• Being effective member in the Work Group

Individual level

Mock Tests

- **Motivational Pattern:** An individual has to make conscious efforts to be aware of what his life goals are. Awareness of one's own need bases can enhance an individual's acceptance of self- concept.
- **Locus of Control:** Personal efficacy is also related to an individual's ability to take the initiative which closely relates to his belief that he can change things. **The concept of locus of control given by Leftcourt (1969) and Levenson (1972)** explains that individuals have beliefs about who is responsible for what happens in life. Some believe that events are determined by external forces like other influential persons in society, luck, destiny and so on. Whereas some others believe that the individuals can determine events. Thus, we have individuals with more external locus of control and some with more internal locus of control. These beliefs definitely have impact on the action orientation of individuals.
- **Power Bases:** Another important concept related to influencing others is **Power**, **Kotter (1979) has defined power as 'a measure of person's** potential to get others to do what he or she wants them to do, as well as avoid being forced to do what he or she does not want to do.' Distinction is also made in terms of fear or love being used as base of exercising this power. Flanders (1970), Hersey and Blanchard (1982) and Pareek (1997) have contributed to the present understanding that coercive bases include organizational **position, punishment, charisma, personal relationship, (emotional power)**, closeness to a source of power and withholding information on resources.

Interpersonal interactions: Dyadic relationship

Two individuals maintaining a sociologically significant relationship - Interpersonal relationship.

Interpersonal Needs

The interpersonal need to control is to **establish and maintain satisfactory relationship including:**

- (a) a psychological comfortable relationship in controlling all behaviour of other people,
- (b) eliciting behaviour from them which controls one's own behaviour.

Transactional Analysis:

A transaction is a combination of a **stimulus and its response in an interpersonal interaction**. The personality of an individual comprises collection of behaviour patterns developed over a period of time.

These life positions are described in terms of Okayness.

Thus the individuals are either OK or NOT OK. Four life positions can be described as:

- I am OK you are OK (both have value)
- I am OK you are NOT OK (I have value but you don't have value)

Mock Tests

- I am NOT OK you are OK (You have value but I don't have value)
- I am NOT OK you are NOT OK (neither person have value)

Working in Teams

The term 'Group Dynamics' was coined in **1930s by Kurt Lewin** It refers to the:

- Internal nature of groups
- How they form
- Their structure and processes
- How they function and affect individuals and organization

Stages in Group Formation and Behaviour

- Forming (Awareness) Members with varied awareness get acquainted, understand the team’s goal and its role
- Storming (Conflict) Conflict among the members helps the team in defining itself
- Norming (Cooperation) How the task will be accomplished? Rules and regulations of the team?
- Conforming (Adjustment) Adjusting one with the team expectations and norms
- Performing (Productivity) Members behave in mature fashion and focus on accomplishing their goal. Full energy dedicated to work.

Self-awareness

Understanding self helps in **self-development and using one's potential better**. It is always useful to do the **SWOT analysis of self to understand the Strength, Weaknesses, Opportunities and Threats**. This may help in better use of strengths, overcoming weaknesses, capitalizing the opportunities and safeguarding against threats. **Refer to the concept of Johari Window given by Loft and Ingham (1973)**.

The closed window is also referred as Private, being private to self.

	KNOWN TO SELF	NOT KNOWN TO SELF
KNOWN TO OTHERS	ARENA	BLIND
NOT KNOWN TO OTHERS	CLOSED	DARK

Emotional Intelligence

'Emotional Intelligence abilities such as being able to motivate oneself and persist in the face of frustration; to control impulse and delay gratification; to regulate one's moods and keep away distress from swamping the ability to think; to empathize and to hope'.

- **Self Awareness:** Ability to recognize, understand one's mood, emotions and drives, as well as their effects on others.

Mock Tests

- **Sell Regulation:** Ability to control or redirect disruptive impulses and moods and propensity to suspend judgment – to think before acting.
- **Self Motivation:** Passion to work for reasons that go beyond money or status and propensity to pursue goals with energy and persistence.
- **Empathy:** Ability to understand the emotional make-up of others and skill to treat people according to their emotional reactions.
- **Social skills:** Proficiency in managing relationships and building networks and ability to find common ground and build rapport.

Morale

Morale is an important mental state and the spirit of a person or group which is dependent on a number of intangible factors within the organization. High morale of an individual or a group contributes significantly to the achievement of organizational goals. Morale is generally exhibited by confidence, cheerfulness, discipline, and willingness to perform assigned tasks.

Employee Morale Booster

- **Welcome Ideas:** Employee morale improves when staff feels they are valued. Share and implement their innovations and ideas.
- **Keep Score:** Mount a large score board in the office to recognize top performers and to motivate those on the bottom of the list.
- **Inspect:** The old management adage, inspect what you expect is true. Companies with a lack of focus can confuse staff and lead to less morale.
- **Thank You Note:** Send a special 'thank you' letter to your staff's family or spouse, praising their good work and efforts.
- **Huddle:** Have a daily morning huddle to highlight tasks for the day and to cheer yesterday's wins.
- **Open Up:** Provide an open forum or one-on-one time to allow employees to express their concerns and feelings can be an easy means to boost morale.
- **Have Fun:** Special events and outside work activities can take the pressure off the day- to-day grind in the office.
- **Show Charity:** Get your staff involved in a bigger cause to help them see there is more to life than work.
- **Add Perks:** Use low cost perks such as a Foosball table in the lunch room.
- **Fire Staff:** Sometimes the root cause of low employee morale can be a staff member whose negativity brings down the group. Even a top performer can bring down staff behind your back.
- **Measure It:** Keep tabs on the levels of morale in your business by regularly measuring employee satisfaction.

Unit 3: Human Implications of Organisations

Human Behaviour and Individual Differences

The behaviour of an individual is influenced by several factors. **These can be grouped under the following heads:**

- **Environmental Factors:** (a) Economic, (b) Social (norms and cultural values), and (c) Political;
- **Personal Factors:** (a) Age, (b) Sex, (c) Education, (d) Abilities, (e) Marital Status, (f) No. of dependants;
- **Organizational Factors:** (a) Physical Facilities, (b) Organization Structure and Design, (c) Leadership, (d) Compensation and Reward System; and
- **Psychological Factors:** (a) Personality, (b) Perception, (c) Attitudes, (d) Values. (e) Learning.

Employees Behaviour At Work

There are some basic assumptions about human behaviour at work:

- There are differences between individuals.
- Concept of a whole person.
- Behaviour of an individual is caused.
- An individual has dignity.
- Organizations are social systems.
- There is mutuality of interest among organizational members.
- Organization behaviour is holistic.

While the first four concepts centred around people, the next two are concerned with organizations. The last one is a combination of the first six assumptions.

Persons differ and again, there are certain 'commonalities' in the persons. Every person is, in certain respects,

- like all other persons,
- like some other persons, and
- like no other person.

This position indicates that an individual possesses some common characteristics of most of the people. He may have some features of some other people. He may also have some characteristics which other persons do not have, i.e. the features unique to an individual.

There are several theories to explain the concept of personality.

One dimension of personality which is getting attention both from organizational as well as medical researchers is the Type A and Type B behaviour profiles.

A person exhibiting Type A behaviour is generally restless, impatient with a desire for quick achievement and perfectionism.

Mock Tests

Type 'B' personality people are much more easy going, relaxed about time pressure, less competitive and more philosophical in nature.

Friedman, Meyer and Ray Roseman have mentioned the following characteristics of Type W personality:

1. Restless by nature, so that he always moves, walks and eats rapidly.
2. Is impatient with the pace of things, dislikes waiting and is impatient with those who are not impatient.
3. Multitasker – does several things at once.
4. Tries to schedule more and more in less and less time, irrespective of whether everything is done or not.
5. Usually does not complete one thing before starting on another.
6. Often displays nervous gestures such as clenched fist and banging on a table.
7. Does not have time to relax and enjoy life.

Type B personality exhibits just the opposite characteristics and is more relaxed, sociable and has a balanced outlook on life.

Erikson has identified eight developmental stages in explaining the personality. These stages which are based on a person's state of mind at a given point of time are mentioned below:

- **Stage 1:** Trust versus Mistrust
- **Stage 2:** Autonomy versus Shame and Doubt
- **Stage 3:** Initiative versus Guilt
- **Stage 4:** Industry versus Inferiority
- **Stage 5:** Identity versus Role Diffusion
- **Stage 6:** Intimacy versus Isolation
- **Stage 7:** Growth versus Stagnation
- **Stage 8:** Integrity versus Despair

Important Theory

Psycho-analytical Theory (PT): PT is based primarily on the Freudian concept of unconscious, subconscious and conscious nature of personality. Freud noted that his patient's behaviour could not always be explained. This led to him believe that the personality structure is primarily founded on unconscious framework and that human behaviour and motivation are the outcome of psychoanalytic elements, namely, id, the ego, and the super ego.

Trait Theory: Trait theory believes that the traits of a person which determine his personality and behaviour are basically inherent to a person, that is, more of a

Mock Tests

heredity impact than the environment .Trait theory explains personality as a demonstration of certain traits of the individual. While there are many traits common to most people, there are many other traits that are unique to a person and are not shared by other individuals. On the basis of Trait theory, **people can be described as aggressive, loyal, pleasant, flexible, humorous, sentimental, impulsive, cool and so on.**

Self-Concept Theory: This theory believes that personality and behaviour are to a great extent determined by the individual himself. We have an image of our own and our actions would be consistent with that image. Carl Rogers is closely associated with this theory. According to him, the best vantage point for understanding behaviour is from the internal frame of reference of the individual himself. An individual himself is the centre of experience. **His self-image is an integral of how he views himself and his perception of how others view him.**

Social Learning Theory: This theory believes that personality development is more a result of social variables than biological factors. Much of human behaviour is either learnt or modified by learning. Through learning, one acquires knowledge, attitudes, values skills, etc.

Personality and Brain (Left and Right Brain)

An important biological factor which influences personality is the role of brain of an individual. Two types of contribution can be found in this area: **Electrical stimulation of the brain (ESB) and split brain psychology.**

Left Hemisphere Controls Right side of body	Right Hemisphere Controls Left side of body
Speech and Verbal	Spatial and musical
Logical and Mathematical	Holistic
Linear and Detailed	Artistic and symbolic
Sequential	Simultaneous
Controlled	Emotional
Intellectual	Intuitive, creative
Dominant	Minor (quiet)
Active	Spiritual
Analytic	Synthetic, gesalt-oriented
Reading, writing, naming	Facial recognition

Mock Tests

Sequential ordering	Simultaneous
Perception of significant order	perception of abstract
Complex motor sequence patterns	Recognition of complex figures

Note: Adapted from Freed Luthans, Organizational Behaviour, 6th Ed.

The Left and Right hemispheres of the brain are attributed with some specific dimensions and characteristics as shown in this table. These areas are, however, still open for further research.

Holland's Typology of Personality and Congruent Occupations

Type	Personality Characteristics	Congruent Occupation
1. Realistic: Prefers physical activities that require skill, strength and coordination.	1. Shy, genuine, persistent, stable, conforming, practical.	1. Mechanic, drill press operator, assembly-line worker, farmer.
2. Investigative: Prefers activities that involve thinking, organizing and understanding.	2. Analytical, original, curious, independent.	2. Biologist, economist, mathematician, news reporter.
3. Social: Prefers activities that involve helping and developing others	3. Sociable, friendly, cooperative, understanding	3. Social worker, teacher, counsellor, clinical psychologist.
4. Conventional: Prefers rule-regulated, orderly,	4. Conforming, efficient, practical, unimaginative,	4. Accountant, corporate manager.

Mock Tests

and unambiguous activities, flexible file clerk	bank teller.	
5. Enterprising: Prefers verbal activities where there are opportunities to influence others and attain power.	5. Self-confident, ambitious, energetic, domineering.	5. Lawyer, real-estate agent, public relations specialist, small business manager.
6. Artistic: Prefers ambiguous and unsystematic activities that allow creative expression.	6. Imaginative, disorderly, idealistic, emotional, impractical.	6. Painter, musician, writer, interior-decorator

Theories of Motivation and Their Practical Implications

What is Motivation?

Motivation in an organizational context is referred as 'the extent of willingness of an employee to respond to the organizational requirements'. Motivation is generally directed, consciously or unconsciously, towards satisfaction of needs (motives). Motivation as a behavioural concept is of great interest to the executives and managers in organizations today.

Theories of Motivation

The various theories of motivation are:

1. Scientific Management or Rational Economic View
2. Human Relations Model
3. Abraham Maslow's Need Hierarchy Theory
4. Frederick Herzberg's Two-Factor Theory
5. Clayton Alderfer's ERG Theory

6. Achievement Motivation Theory

7. Victor H Vroom's Expectancy Model

8. James Stacy Adams' Equity Theory

9. Lyman W. Porter and Edward E Lawler - Performance Satisfaction Model.

10. Reinforcement Theory

Herzberg's Two-Factor or Motivation-Hygiene Theory

Frederick Herzberg (1959) extended the work of Maslow and developed a specific content theory of work motivation. He conducted a widely reported study on about 200 accountants and engineers from eleven industries in Pittsburg, USA. He used the critical incident method of obtaining data for analysis.

Herzberg's theory is based on a two-factor hypothesis, that is, factors leading to job satisfaction and the factors leading to job dissatisfaction. The factors so identified were classified by him into two categories:

- Motivational Factors; and
- Hygiene or Maintenance Factors

Motivational Factors

These factors are related directly to the job itself. The presence of such factors creates a highly motivating situation, but their absence does not cause dissatisfaction. People tend to respond positively to the presence of such factors. **Herzberg mentioned six such factors:**

- Recognition
- Advancement
- Responsibility
- Achievement
- Possibility of Growth
- Work itself

Factors like achievement and responsibility are related to job itself and others emanate from it. This set of factors has been designated as motivators or satisfiers and are related to job contents.

Hygiene or Maintenance Factors

This set of factors is such that their presence does not significantly motivate the employees but their absence cause serious dissatisfaction. The non-availability of such factors is likely to affect motivation and bring down the level of performance.

[Mock Tests](#)

Maintenance factors mostly are related to environment, outside the job. Herzberg named ten such factors:

- Company policy and administration
- Technical supervision
- Interpersonal relations with subordinates
- Salary
- Job security
- Personal life
- Working conditions
- Status
- Interpersonal relations with supervisors
- Interpersonal relations with peers and colleagues

Motivation and Behaviour

Behaviour of an individual is generally motivated by a desire to achieve some goal. Behaviour is either an 'activity' or, 'a series of activities'. Each activity is supported by motivation. Individuals differ not only in their ability to do but also in their will to do, or motivation. Motives are sometimes defined as needs, wants, drives, or impulses within the individual. These are directed towards goals, which may be conscious or subconscious. Goals are outside an individual. Goals are sometimes referred to as 'hoped for' rewards towards which motives are directed.

Motivation to Work

Manager should also know specific ways and techniques to motivate employees in the work situation. Most of these techniques are practical in nature and can be adopted by him in the normal course. Some of the frequently used common incentives in organizations are:

Money, appreciation, job enlargement, job enrichment, job rotation, participative management, and quality of work.

Factors contribute to the quality of work life:

- Adequate and fair compensation.
- A safe and healthy environment.
- Jobs aimed at developing and using employee's skills and abilities.
- Growth and security; jobs aimed at expanding employees' capabilities rather than leading to their obsolescence.
- An environment in which employees develop self-esteem and a sense of identity.
- Protection and respect for employee's rights to privacy, dissent, equity. etc.
- A sensible integration of job career and family life and leisure time.

Role Set Conflicts

The role set consists of important persons who have different expectations from the

Mock Tests

role

that an individual occupies. The conflicts arise due to incompatibility among the expectations of significant others and the individual himself. **These role set conflicts take the following forms:**

- Role ambiguity
- Role Expectation Conflict
- Role Overload
- Role Erosion
- Resource Inadequacy
- Personal Inadequacy
- Role Isolation

Unit 4: Employee Feedback and Reward System

Employees' Feedback

- **Satisfaction of employees at workplace is considered an important parameter for achieving organizational objectives.** Progressive organizations always try to get the regular feedback from the employees on various human resource management aspects, and new initiatives taken in this regard through some satisfaction or climate surveys.
- The information is gathered both formally and informally about the attitude and satisfaction of employees. This information is used for refining and fine tuning the policy initiatives from time to time. At formal level the information and feedback is gathered through well designed **questionnaires, psychological instruments, Suggestion schemes, etc.**

Feedback through Climate Surveys

Organizations used to measuring employees' perceptions of the prevailing climate in an organization are called climate surveys. **The coverage of a typical survey can be as follows:**

- **Structure:** The feeling that employees have about the constraints on the groups, rules, regulations, procedures, communications channels (layers in decision making), delegation and authority, etc.
- **Responsibility:** The feeling of being your own boss, clarity of role and responsibility vis-a-vis superior, subordinates and peers, etc.
- **Reward:** The feeling of being rewarded for a job done well, perception about reward and punishment system, perception about pay and promotion, etc.
- **Risk:** The sense of riskiness and challenge in the job and in the organization, and any emphasis on taking calculated risk (risk taking is encouraged and bona fide errors are protected) or playing safe is encouraged and accepted.

Mock Tests

- **Warmth:** The general feeling of fellowship that prevails in the workgroup atmosphere, the prevalence of informal supporting culture and social groups.
- **Support:** The perception about helpfulness of managers and other employees in the group, emphasis on mutual support from above and below in the hierarchy.
- **Standards:** The perceived importance of implicit and explicit goals and performance standards, the emphasis on doing a good job, the challenge represented in personal and group goals.
- **Conflict:** The feeling that the managers and other workers want to hear different opinions, the process of conflict resolution, opportunity to express the views, etc.
- **Identity:** The feeling of belonging to the organization and perceived value in the organization and work group, etc.

Reward and Compensation System

The wages in the form of compensation is viewed as the main attraction to join or change a job. The compensation should not be so meager that employees do not feel motivated to put in their best. **the compensation should be such that it continually attracts talent, it is a major source of retention** of the existing manpower and has an edge which motivates them to give their best.

Types of Compensations

Compensation is expressed in terms of money. It would thus include: wages or salary, bonus, cash allowances and benefits such as accident, health insurance cover, employer's contribution to the retirement funds, provision of accommodation, etc. The jobs are broadly classified in four groups and the compensation for them is commonly referred to as shown below:

- Managerial (top, middle, junior) ... remuneration
- Supervisory ... salary
- Clerical or Administrative ... salary
- Unskilled, semi-skilled, skilled and highly skilled ... wages

Compensation Base

Compensation policy is an important element in personnel management. What is the basis or factors on which compensation gets decided? It could be:

- Company objectives
- Market situation or prevailing market rate

- Internal and external pressures.

Compensation Theories

Let us now consider conceptual and theoretical aspects of compensation. A good compensation package should cover factors like **adequacy, societal considerations, supply and demand position, fairness, equal pay for equal work and job evaluation**. These concepts are explained briefly:

Adequacy of Wages

The Committee on Fair Wages pronounced certain wage concepts such as:

- Minimum wages
- Living wages
- Fair wages
- Need-based minimum wages

Alignment of Corporate Strategy, HR Strategy and Compensation system

Strategy	HR Program	Compensation System
Innovator	Committed to agile , risk taking, innovative People	Reward innovation in products Market based pay Flexible
Cost Cutter	Efficiency Operational Excellence	Focus on competitors labour cost increase variable pay Emphasize productivity Focus on system control and work Specifications
Customer Focused	Delight Customer Exceed Expectations	Customer Satisfaction Incentives Value of Job and Skills based on Customer contact

Societal Consideration and Legal Framework

The level of compensation in any industry, theoretically, gets decided by the **socio-economic considerations**. Skewed distribution of wages will make the flow of supply shift and with the application of basic principle of demand and supply the equilibrium will be attained. This means that the compensation levels will, more or less,

Mock Tests

tend to be at par for the comparable work. In practice, however, this happens very rarely. In the free economy the Government does not control the aspect of wage administration and normally the market forces determine the compensation level. However, the administration is bound to protect the workforce from irrationally low wages. **Taking this as the prime objective the Indian Government has enacted:**

- The Payment of Wages Act, 1936,
- The Minimum Wages Act, 1948
- The Payment of Bonus Act, 1965, and
- The Equal Remuneration Act, 1976.

Job Evaluation

This is one important measure to determine the level of compensation package. A scientific job evaluation will ensure parity of compensation levels for similar or equal jobs. It also helps in distinguishing jobs in the level of **complexity, skills required, the risk involved and link compensations accordingly**. Job evaluation is a method of appraising the value or worth of one job in comparison to other jobs in the organization.

The objectives are:

- To determine the compensation rates
- To link pay with the requirement of the job
- To provide for pay differentials taking into account skills, efforts, hazards required in each job
- To establish a compensation structure.

Job Evaluation Techniques

Non-quantitative Methods:

- Ranking or Job Comparison
- Grading or Job Classification

Quantitative Methods:

- Point Rating
- Factor Comparison

Designing Compensation Structure

- **Step 1:** Create a complete job Description for Jobs
- **Step 2:** Calculate the Job evaluation point for the Job, provide a rationale for assigning specific degree to the various Jobs.

Mock Tests

- **Step 3:** Outliers to be considered, (assume no extreme data points exits in the dataset)
- **Step 4:** Conduct a simple regression in Excel to create a market pay line by entering the job evaluation point (on the X axis) and the respective weighted average market base pay (on the Y axis) for each benchmark job.
- **Step 5:** Finding out R squared (Variance explained)? Is it sufficient to proceed?
- **Step 6:** Calculate the predicated base pay for each benchmark job.
- **Step 7:** Assuming company wants to lend in base pay by 3%, adjust the predicated pay rates to determine the base pay rate you will offer for each benchmark job.
- **Step 8:** Create pay grades by combining any benchmark jobs that are substantially comparable for pay purpose.
- **Step 9:** Determine the pay range (Minimum & Maximum) for each pay grade.
- **Step 10:** Given the pay structure you have generated.

Unit 5: Performance Management

Heyel defines performance appraisal as 'a process of evaluating the performance and qualifications of the employees in terms of requirements of the job for which they are employed, for the purposes of administration including placement, selection for promotions, providing financial rewards and other actions which require differential treatment among the members of a group as distinguished from actions affecting all members equally.'

Appraisal Systems

Performance appraisal is an organizational necessity. Various appraisal systems have evolved over a period of time. These systems vary from simple to complex, from vague to objective, from unstructured to structured and from confidential to open.

An organization has the option to device its own system or can adopt, with certain modifications, some other's system. What system one should choose will depend on whether it fulfills the objectives the organization wants the system to serve.

Objectives of Performance Appraisal System

- **Judgemental** - for salary increases, transfers and promotions;
- **Developmental** - telling an employee how is he doing and suggesting changes in his skills, attitudes, behaviour;
- **Counseling by superior** - for giving feedback and understanding problems for poor performance.

Uses of Performance Appraisal

- It rates all the employees in a unified manner by using the same rating scales and thus making them comparable on a common footing.

Mock Tests

- It provides information which could be critical while deciding on promotion, pay increases, transfers, training, etc.
- It provides information about the areas of weaknesses of the employee to enable initiation of corrective steps.
- It improves the quality of supervision as the supervisor becomes a keen observer.
- The system, if implemented with openness and trust, ensures better interpersonal relations between the employee and his supervisor.

Performance Appraisal Process

There are following steps in the evaluation process:

- The process begins with the organization setting the '**performance standards**' in advance. These standards should be clear, realistic and measurable. It is advisable to involve the line managers in the exercise as they understand the nuances and nitty- gritty of the job.
- The performance standards then are required to be communicated to the employees.
- The next stage is to measure the performance. It can be done through the data available with the **department, personal observations, and feedback from the appraisers.**
- Performance level of the employee is then compared with the benchmark or standard already established. Deviations are discussed and the reasons for deviations are noted.
- The outcome is discussed with the employee, emphasising the strong points and counselling him on the weak points.
- The last step is to initiate corrective measures and act on the positive performance by deciding on various incentives **like increments, promotions, training needed, etc.**

Performance Appraisal Methods

Traditional Methods

- Free Form Essay Method
- Straight Ranking Method
- Comparison Method
- Grading Method
- Graphic or Linear Rating Scales
- Forced Choice Description Method
- Forced Distribution Method
- Group Appraisal Method

Modern Methods

- Assessment Centre Workshops

Mock Tests

- Management by Objectives
- Human Asset Accounting Method
- Behaviourally Anchored Rating Scales
- 360 Degree Appraisal Method

Performance Appraisal versus Confidential Report

In a large number of organizations the **annual performance appraisal** exercise is carried out as a confidential activity. In fact, the **form in which the performance of the employee is evaluated and reported is called confidential report.**

Merits and Demerits of performance appraisal system

Advantage

- It reveals a concern for performance and creates an atmosphere of openness and trust in the organization.
- Gives feedback to the employee and ensures that corrective steps are taken in time.
- It raises the general motivation level of the employees if implemented properly.

Disadvantage

- **The halo effect** — a tendency to allow one trait or characteristic of an employee to influence the assessment. The halo is to rate an employee consistently high or low.
- The leniency or strictness tendency of the superior interferes with the appraisal and accordingly the assessment gets influenced. The superior is unable to come out of these tendencies.
- The central tendency problem refers to assigning average ratings to all the employees without properly evaluating each aspect of appraisal carefully and fearlessly.
- Similar error is the tendency of comparing the employee with oneself on various traits and parameters. Those who show the similar characteristics are normally rated high.

Giving Feedback

Giving a feedback without hurting a person's feelings is an art. **The points covered above in respect of appraisal interview are also relevant for giving feedback to the employee.** To give feedback, it is necessary to arrange the meeting in a congenial environment. After carefully listening to the employee, the appraiser should take command of the situation and give an honest feedback to the employee with an objective to help his development. **The following points are crucial for giving feedback:**

Mock Tests

- The feedback should be objective and should help employee in reaching appropriate level of performance in future.
- The feedback should be suggestive in nature rather than Judgemental and should focus on the training and developmental needs of the employee.
- The superior should adopt a problem-solving approach and not fault-finding approach. The trust of the employee will be reinforced if a sincere attempt is made in giving feedback with an intention to help him.
- The superior should never lose sight that his aim is to improve the performance of the appraisee and not to criticize him.

Do's and Don'ts

Based on what has been discussed above, the DO's and DON'Ts of the appraisal interview and giving of feedback can be easily summarized:

Do's

- allow the employee to do the maximum talking,
- encourage him to describe his success and failure,
- create an atmosphere where he will open up.
- praise him for his achievements.
- tell him honestly what you think where he could have done well,
- ask him what kind of help he expects from you.
- extend to him all that you can do for him.

Don'ts

- arrange a meeting when you are unable to devote time undisturbed.
- allow any kind of disturbance once the meeting starts,
- adopt judgmental role,
- criticize him for his failures.

Counselling

The prime purpose of counselling is to communicate to employee the feedback of the performance and expectations and, help the employee to understand the areas of concern with the sole objective of improvement of his performance. If the feedback system is effective, the employee not performing up to the mark gets to know clearly where he stands against the set benchmarks.

The following could be considered as counselling skills:

- It is essential to follow the stages mentioned earlier in respect of appraisal interview and feedback session. It helps in creating conducive atmosphere. The appraiser should realize that it is a common human tendency to react negatively to the feedback process, and particularly to the counselling process.

Mock Tests

- The process should start by communicating the purpose of the counselling.
- The appraiser should be specific and descriptive when he is evaluating the performance.
- Appraiser should avoid commenting on the person and centre his discussion on the issues related to performance.
- His intention should be to assist the employee to overcome his problems. With this prime objective, even when he is criticizing the behaviour (and not the person) he should do it carefully. Criticizing without crippling should be the motto.
- He should listen to the employee and try to help him.
- He should offer workable solutions and act where the appraises can initiate improvement.
- Appraiser should not have any prejudice about the employee and try to evaluate the employee's version objectively.
- Successful counselling is effective listening.

Unit 6: HRM and Information Technology

Using **technology** to continuously **improve the quality of the work**. Technology can improve the information available to HR, facilitating HR processes, and making them faster and more effective. One of the biggest allies in **HRM, HRIS is adopted to make organizations more accurate and effective**.

The banking sector has absorbed maximum technology for their operations. IT has offered a variety of delivery channels to support customers' needs in an efficient and effective manner.

Role Of Information Technology In HRM

As **such its first responsibility would be to adopt the IT orientation within the department. There is tremendous scope to use IT in a whole range of HRM functions.** viz. recruitment, training, placement, appraisal and reward systems, organizational development initiatives, etc. **The need for use of IT can be seen through the following observations:**

- **Certain basic information about an employee is used by number of functionaries within and outside the HR department.** For instance, if the organization has a geographical spread, the information about an employee is floated at field units, maintained and processed at field administrative units as well as at the corporate (control) office.
- The database related to an employee is becoming broad-based as various dimensions are getting added. e.g. along with the **traditional data regarding salary, allowances, increments, leave, etc.**
- Updating the data could be done partially by **different individuals from different locations.**

Mock Tests

- **The decisions related to HR – day-to-day or policy reviews** – need to be embedded in databases to achieve objectivity and consistency in decisions. Such objectivity is imperative and can be achieved as IT enhances transparency.
- Human Resources being one of the significant **components of internal environment, policy review** must be undertaken to respond to the changes.
- To ensure adherence to statutory **requirements, maintaining of such database is needed.**

Human Resource Information System (HRIS)

Human Resource Information System (HRIS) has become an organizational necessity. The need for HRIS is an offshoot of the requirement to take **frequent strategic decisions concerning employees**. Decisions taken on the basis of information, whether it is **concerning, posting, training, compensation, job rotation, promotion, etc.**

Maintenance of Database, Access Control and Use for Decision Making

It is evident from the contents of **HRIS database mentioned above that all data do not need updating frequently**. Some of the static data required to be entered only once in master file, viz., **name, date of birth, date of joining, etc. Data on placement, training, etc.,**

HR Research

Research in HRM can be undertaken to understand: trends of existing systems like **recruitment, promotion, training, appraisal system** etc. to understand the workforce in terms of **motivation, commitment, expectation, frustration** etc. to remain sensitive to internal environment, regular opinion surveys, benchmarking, climate studies etc. can be conducted.

Knowledge Management (KM)

- KM refers to process of **(a) creating, (b) storing (c) distributing and (d) pooling the knowledge (as per Wilcox-1997)**. The people in a system are the sources of creating knowledge while storing and distributing the information is the responsibility of the information technology machinery of the organization.
- Hence management of 'knowledge worker' is very critical issue and cannot be done by traditional, bureaucratic process. Knowledge management has gained prominence in the light of the uncertainty that the employee who has created the knowledge, will continue with the organization or not, particularly where the attritions are higher.

Technology in training

Mock Tests

The technology offers an opportunity in designing training interventions to suit the individual learners. **Important features are:**

- Mass learning user friendly material can be produced at low cost.
- Trainers and trainees can be physically separated.
- Trainee has the option to choose time and date and place and convenience form for learning.
- Technology based training methods help in distance learning.

Advantages of E-Learning:

- Enables learner to study at his convenient time and place and can have privacy
- Enables him to study at his own pace
- Can offer high level inter-action with immediate feedback and provide opportunity to check his understanding
- Can be simulated to real life situation
- Can be cost effective depending upon its use

Disadvantages of E-Learning

- Relatively inflexible depending on a pre-produced programme
- Requires greater self-discipline and commitment by the learner
- May induce a sense of isolation
- Does not permit personal reinforcement, therefore, the motivational effects are forgone
- Can prove costly as expensive H/W and S/W are required

Module D: Credit Management

Index

Unit 1	Overview of Credit Management
Unit 2	Analysis of Financial Statements
Unit 3	Working Capital Finance

Mock Tests

Unit 4	Term Loans
Unit 5	Credit Delivery
Unit 6	Credit Control and Monitoring
Unit 7	Risk Management and Credit Rating
Unit 8	Rehabilitation/ Rehabilitation and Recovery

Unit 1: Overview of Credit Management

Credit

Credit is the trust which allows one party to provide money or resources to another party wherein the second party does not reimburse the first party immediately, but promises either to repay or return those resources at a later date.

Principles of Credit

Over a period of time, bankers have evolved certain basic principles for their lending operations. Bank's loan policies, and other aspects of credit management, are influenced to a great extent by these unwritten principles, **which are as under:**

- Safety of funds
- Purpose
- Profitability
- liquidity
- Security
- Risk spread

Types of Borrowers

A borrower can be:

- An individual
- Sole proprietary firm
- Partnership firm and joint ventures
- Hindu undivided family

Mock Tests

- Companies
- Statutory corporations
- Trusts and co-operative Societies

Types of Credit

- **Fund Based:** In fund-based credit, there is actual transfer of money from the bank to the borrower.
- **Non-Fund Based:** In non fund based credit, there is no transfer of money, but the commitment by the bank on behalf of the client, may result in future transfer of money to the beneficiary of such a commitment. **Example** of this is a bank guarantee issued in favour of government departments (or any other beneficiary) on behalf of a contractor, who is bank's customer.
- **Credit can also be classified based on purpose**, like working capital finance, project finance, export finance, crop loan, etc. Banks often classify their credit portfolio based on the type of the customers like, Corporate, retail, agriculture, international, institutional credit, etc.

The laws applicable to all these different kinds of borrowers are different.

Type of Borrower	Applicable Law
Individuals	Indian Contract Act
Partnership firms	Indian Partnership Act
Hindu undivided family	Customary laws pertaining to Hindus
Companies	Companies Act
Statutory corporations	Acts that created them
Trusts	Indian Trusts Act, Public Trusts Act, Religious and Charitable Endowments Act, Wakf Act
Co-operative Societies	Co-operative Societies Act or Societies Registration Act.

Components of Credit Management

- Loan Policy of the Bank
- Appraisal

- Delivery
- Control and Monitoring
- Rehabilitation and Recovery
- Credit Risk Management
- Refinance

Role of Rbi's Guidelines In Bank's Credit Management

End Use of the Funds:

- It is the primary responsibility of banks to ensure proper end use of bank funds/monitor the funds flow. It is, therefore, necessary for banks to evolve such arrangements as may be considered necessary to ensure that drawals from cash credit/overdraft accounts are strictly for the purpose for which the credit limits are sanctioned by them.

Priority Sector:

The main sectors, included in the priority sector are as follows:

- Agricultural finance
- Finance to micro and small enterprises
- Housing finance [(loans up to **Rs 20 lakh** to individuals for purchase or construction of dwelling unit), Loans up to **Rs 1 lakh and Rs 2 lakh** for repairing of houses in rural or semi-urban and urban areas respectively].
- Educational loans(up to **Rs 10 lakh for studies in India and Rs 20 lakh** for studies abroad)
- **Export credit:** export credit by domestic banks is not treated as finance to priority sector for the purpose of priority sector target. But, export credit by foreign banks is treated as finance to priority sector.
- **Micro-credit provided by banks either directly or through any intermediary:** Loans to self help groups (SHGs) [Non Governmental Organizations (NGOs) for on-lending to SHGs
- Retail trade
- **Khadi and Village Industries Sector (KVI);**All advances granted to units in the KVI sector irrespective of their size of operations, location and amount of original investment in plant and machinery, are covered under priority sector

advances and are eligible for consideration under the sub-target (60 per cent) of the small enterprises segment within the priority sector.

Targets for Priority Sector Lending

The targets and sub-targets set under priority sector lending for domestic and foreign banks operating in India are furnished here: (Figures are given as per cent of Adjusted Net Bank Credit (ANBC) or credit equivalent amount of Off-Balance Sheet Exposure, whichever is higher)

- **Segment 'a'**, Total Priority Sector advances, Target for **Domestic Banks, both public and private sectors, 40 per cent** and Target for Foreign Banks operating in India, 32 per cent.
- **Segment 'b'**, Total Agricultural advances,, Target for Domestic Banks, both public and **private sectors, 18 per cent and Target for Foreign Banks operating in India, No target.**
- **Segment 'c'**, Small enterprise advances,, Target for Domestic Banks, both public and private sectors, **No target and Target for Foreign Banks operating in India, 10 per cent.**
- **Segment 'd'**, Export Credit,, Export credit does not form part of priority sector.
- **Segment 'e'**, Advances to weaker sections,, Target for Domestic Banks, both public and **private sectors, 10 per cent** and Target for Foreign Banks operating in India, No target.

The weaker sections under priority sector include the following:

- Small and marginal farmers with land holding of 5 acres and less and landless labourers, tenant farmers and share croppers.
- Artisans, village and cottage industries where individual credit limits do not exceed Rs 50,000/-
- Beneficiaries of Swarnjayanti Gram Swarojgar Yojana (SGSY)
- Scheduled Castes and Scheduled Tribes
- Beneficiaries of Differential Rate of Interest (DRI) scheme
- Beneficiaries under Swama Jayanti Shahari Rojgar Yojana (SJSRY)
- Beneficiaries under the Scheme for Liberation and Rehabilitation of Scavangers (SLRS).
- Self Help Groups (SHGs)
- Individual Women beneficiaries up to **Rs 1lac per borrower.**

Mock Tests

- Distressed persons other than farmer, with loan amount **not exceeding Rs 1lac per borrowers to repay their to non-institutional lenders.**

Note: No loan related ad andhoc service charges/ inspection charges should be levied on priority sector loans up to Rs 25000. In the case of eligible priority sector loan to SHGs/JLGs, this limit will be applicable per member and not to the group as a whole.

MSMED Act 2006

Enterprises engaged in **the manufacture or production.** processing or preservation of goods

- **A micro enterprise** is an enterprise where investment in plant and machinery does **not exceed Rs. 25 lakh;**
- **A small enterprise** is an enterprise where the investment in plant and machinery is more than **Rs. 25 lakh but does not exceed Rs. 5 crore;**
- **A medium enterprise** an enterprise where the investment in plant and machinery is more than **Rs. 5 crore but does not exceed Rs.10 crore.**

Enterprises engaged in **providing or rendering of services**

- **A micro enterprise** is an enterprise where investment in equipment **does not exceed Rs. 10 lakh;**
- **A small enterprise** is an enterprise where the investment in equipment is **more than Rs. 10 lakh but does not exceed Rs. 2 crore;**
- **A medium enterprise** an enterprise where the investment in equipment is **more than Rs. 2 crore but does not exceed Rs.5 crore.**

RBI revises priority sector lending guidelines

- **The Reserve Bank of India (RBI) on 4th September 2020** said it has revised priority sector lending (PSL) guidelines to include entrepreneurship and renewable resources, in line with emerging national priorities.
- **Bank finance to start-ups (up to Rs 50 crore),** loans to farmers for installation of solar power plants for solarisation of grid-connected agriculture pumps and loans for setting up Compressed BioGas plants have been included as fresh categories eligible for finance under priority sector.

Other Highlights of revised priority sector lending guidelines

- **The new guidelines are applicable** to all commercial banks including regional rural banks, small finance banks, local area banks and primary (urban) co-operative banks other than salary earners' banks. PSL guidelines were last

reviewed for commercial banks in April 2015 and for urban co-operative banks in May 2018.

- Higher weightage has been assigned to incremental priority sector credit in 'identified districts' where priority sector credit flow is comparatively low.
- The targets prescribed for **“small and marginal farmers”** and **“weaker sections”** are being increased in a phased manner.
- **“Revised PSL guidelines** will enable better credit penetration to credit deficient areas; increase the lending to small and marginal farmers and weaker sections; boost credit to renewable energy, and health infrastructure.

Statutory and Other Restrictions on Some Credits

The following credit restrictions have been placed on the banks:

(Details as per RBI circular No. Dir. BC. 13113.03.00/2009-10 dated 1, July 2009)

- Advances against Bank's own shares: In terms of Section 20(1) of the Banking Regulation Act, 1949, a bank cannot grant any loans and advances on the security of its own shares.
- Restrictions on granting loans and advances to relatives of Directors
- Restrictions on Grant of Loans & Advances to Officers and Relatives of Senior Officers of Banks
- Restrictions on Grant of Financial Assistance to Industries Producing or Consuming Ozone Depleting Substances (ODS)
- Restrictions on Advances against Sensitive Commodities under Selective Credit Control (SCC)
- Advances against Fixed Deposit Receipts (FDRs) Issued by Other Banks
- Loans against Certificate of Deposits (CDs)
- Restrictions on Credit to Companies for Buy-back of their Securities

Unit 2: Analysis of Financial Statements

Financial Statements

There are basically two financial statements which every business enterprise is required to prepare. These are:

- Balance sheet

Mock Tests

- Profit & Loss account (Income & Expenditure statement in case of non-profit organizations)

Apart from these, **the auditors' report, explanatory schedules and notes on accounts, if applicable**, provide useful information to the bankers.

A funds flow statement also provides useful information but, this is only a mathematical analysis of changes in the structure of two consecutive balance sheets and can be easily prepared by the banker/ analyst himself if the basic statements, i.e. the balance sheets, are available. Accounting Standard-3 makes it mandatory for some enterprises to prepare Cash Flow statement for the accounting period (these enterprises are those whose equity or debt is listed or is in the process of being listed on a recognized stock exchange and also all other commercial, industrial and business enterprises whose turnover for the accounting period exceeds Rs.50 crore. These enterprises are also required to do segment-wise reporting as per A S - 1 7.

Users of Financial Statements

Apart from bankers, the other users of financial statements are:

- Other creditors and lenders
- Investors
- Government agencies
- Rating agencies
- Customers
- Employees
- General public
- Analysts

Basic Concepts Used in Preparation of Financial Statements

The important concepts are as under:

- Entity Concept
- Money Measurement Concept
- Stable Monetary Unit Concept
- Going Concern Concept
- Cost Concept
- Conservatism Concept
- Dual Aspect Concept
- Accounting Period Concept
- Accrual Concept
- Realization Concept
- Matching Concept

Mock Tests

The format of balance sheet can be either Vertical or Horizontal as illustrated below (activities like banking, insurance, electricity generation etc, which are governed by acts other than Companies Act, need not follow these formats)

Horizontal Form: Horizontal form is maintained in two columns. The first column shows the Liabilities and the second one shows the Assets.

The items shown in the first column against Liabilities are:

- Share Capital Reserves
- Surplus Secured loans
- Unsecured loans
- Current liabilities
- Provisions

The items shown in the second column against Assets are:

- Fixed assets
- Investments
- Current assets
- Loans and advances
- Miscellaneous expenditure

Vertical Form: In the Vertical Form, the different items are shown one below the other.

(A) Sources of funds

1. Shareholders' funds

(a) Share capital

(b) Reserves and surplus

2. Loan funds

(a) Secured loans

(b) Unsecured loans

(B) Application of funds

1. Fixed assets

2. Investments

3. Current assets, loans and advances

Less: Current liabilities and provisions Net current assets

4. Miscellaneous expenditures

I. Equity and Liabilities

Shareholder's funds

- Share capital
- Reserve and Surplus
- Money received against share warrants

Share application money pending allotment

Non-current liabilities

- Long-term borrowings
- Deferred tax liabilities (Net)
- Other long term liabilities
- Long term provisions

Current liabilities

- Short-term borrowings
- Trade payables
- Other current liabilities
- Short-term provisions

Total-

II. Assets

Non-current assets

- Fixed assets

(i) Tangible assets

(ii) Intangible assets

(iii) Capital work-in-progress

(iv) Intangible assets under development

- Non-current investments
- Deferred tax assets (net)
- Long-term loans and advances
- Other non-current assets

Current Assets

- Current investments
- Inventories
- Trade receivables

Mock Tests

- Cash and cash equivalents
- Short-term loans and advances
- Other current assets

Total-

Accounting

As per Income Tax rules, April to March is considered as the financial year for tax purposes. However, as per Companies Act, this can be different. Only restriction, as per Companies Act, is that the maximum duration of the financial year can be 15 months, and can be extended up to 18 months with the permission of Registrar of Companies (ROC).

Profit And Loss Account

It is a statement of income and expenditure of an entity for the accounting period. Every P and L account must indicate the accounting period for which it is prepared The items of a P & L account are:

- Gross and Net sale
- Cost of goods sold
- Gross profit
- Operating expenses
- Operating profit
- Non-operating surplus/deficit
- Profit before interest and tax
- Interest
- Profit before tax
- Tax
- Profit after tax (Net Profit)

Analysis of financial statements

- Astt of fin position/performance
- Projections of future performance
- Warning signals
- Credit requirement assessment
- Exam fund flow
- Cross checking
- **Fund flow analysis** : diversionidle funds
- **Trend analysis** : trends/op. efficiency
- **Ratio analysis** : profitability, liquidity, capital structure(der), ability to service debt/int, inventory/debtor turnover

Bankers mostly use three methods for analysis of financial statements

- Funds Flow Analysis
- Trend Analysis
- Ratio Analysis

While different users of financial statements are interested in different ratios, the ratios which interest a banker most, are the following:

- Profitability Ratios
- Liquidity Ratios
- Capital Structure Ratios
- Ratio Indicating Ability to Service Interest and Instalments
- Turnover Ratios
- Inventory Turnover Ratio
- Debtors' Turnover Ratio

Unit 3: Working Capital Finance

Working Capital

Whenever a **business enterprise is started, some fixed assets like office, furniture, machines/computers etc, depending upon the need, are acquired.** But this alone may **not be sufficient for running the business of that enterprise, except for a few activities like broking/commission agent, etc.** Most of the business enterprises, in the course of their business, have to carry some current assets like raw materials, finished goods, receivables etc. The money blocked in these current assets is **called working capital.**

Working Capital Cycle

The **normal operations of a business enterprise consist of some or all of the actions like, purchase of raw materials, processing and conversion of raw materials into finished goods, selling these goods on cash/ credit basis, receive cash on sale or end of credit period and again purchase raw materials.** This is called **working capital cycle. The length of this cycle depends on:**

- The stocks of raw materials required to be held
- The work in process, which in turn depends on the process involved in manufacturing and processing the raw materials
- The credit required to be provided to the purchasers

Importance of Liquidity Ratios

Mock Tests

- **For a banker, providing working capital finance**, the liquidity ratios, specially the current ratio, play a very important role in assessment, sanctioning decision, and monitoring.
- The assessment involves stipulation of a minimum Net Working Capital (N W C) to be brought in by the enterprise from its long term sources. This results in a minimum current ratio (more than one) which the bank wants the enterprise to maintain at all the times. This is, normally, mentioned in the terms and conditions of sanction and becomes an important tool for the bank to monitor the use of funds by the enterprise.

Method of Assessment of Bank Finance

Deciding on the level of Turnover of the Enterprise: This is a very important step in any method of assessment of **working capital limits**. In case of existing enterprises, the past performance is used as a guide to make an assessment of this. In case of new enterprises, this is based on the production capacity, proposed market share, availability of raw materials, industry norm etc.

Assessment of Gross or Total Working Capital: This is the sum total of the assessment of various components of the working capital.

- Inventory
- Receivables and Bills
- Other Current Assets

Sources for Meeting Working Capital Requirement:

- Own Sources (N W C)
- Suppliers' Credit
- Other Current Liabilities like salaries payable, advances from customers, etc.
- Bank Finance

Calculation of Bank Finance

Though **banks are now free to formulate their own policies, the methods of lending**, mentioned there, still find place in the calculations followed by the banks. **The methods are;**

- **First Method of Lending:** Under this, the enterprise was required to bring in at least 25 per cent of the working capital gap (total current assets minus total current liabilities excluding bank finance).
- **Second Method of Lending:** Under this, the enterprise was required to bring in at least 25 per cent of the total current assets.

Mock Tests

- **Third Method of Lending:** Under this, the enterprise was required to bring in 100 per cent of those current assets which are considered 'core assets' and at least 25 per cent of the remaining current assets.

Cash Budget Method of Assessment

Any economic activity, however small it may be, involves outflows (expenditure) of money for procurement of inputs and inflows of money (income) from the sale of output The nature, amount and periodicity of outflows and inflows is peculiar to the type of activity, level of operations, market conditions and the policies adopted by the owners/managers etc.

A normal statement / budget, will look as under:

Inflows

1. Opening balance
2. Term loan from Bank
3. Sales (Total sales-credit sales + realization for ealier sales)
4. Other cash inflows

Total inflows

Outflows

1. Capital expenditure
2. R. M. Purchase
3. Labor
4. Power and fuel
5. Payment of Interest
6. Repayment of Term loan installment
7. Other cash outflows

Total outflows

Cash surplus or (deficit)

- Bank finance needed
- Closing balance

Bills / Receivables Finance by the Banks

Mock Tests

Receivables are part of the current assets of a business enterprise. These arise due to sales on credit basis to the customers. The bank provides finance against these in a fashion similar to that for inventory.

Another method of sales is through Bills of exchange drawn by the seller on the purchaser in the following manner;

- If no credit is to be provided to the customer, a demand bill is drawn.
- If the credit is to be provided on the sales, a bill of exchange, called usance bill, mentioning the period of payment, is drawn on the purchaser and is accepted by him. The outstanding amount is shown in the accounts as 'bills receivables'.

The **terms used in bills finance are purchase, discount and negotiation.** Normally, 'purchase' is used in case of demand bills, '**discount**' in case of usance bills and '**negotiation**' in case of bills which are drawn under letters of credit opened by the purchaser's bank.

Non-Fund-Based Working Capital Limits

- Guarantees
- Co-acceptance of Bills
- Letters of Credit
- Commercial Paper (CP)
- Unsecured money market instrument
- Issued in the form of a promissory note
- Introduced in India in
- Cost of borrowing through CP is normally lower compared to other sources of short term finances

Guidelines of RBI for Discounting / Rediscounting of Bills by Banks

- Banks may sanction working capital limits, as also bills limit, to borrowers after proper appraisal of their credit needs and in accordance with the loan policy as approved by their Board of Directors.
- Banks should open letters of credit (L Cs) and purchase / discount / negotiate bills under L Cs only in respect of genuine commercial and trade transactions of their borrower constituents who have been sanctioned regular credit facilities by the banks.

Mock Tests

- If a beneficiary of the LC wants to discount the bills with the LC issuing bank itself, banks may discount bills drawn by beneficiary only if the bank has sanctioned regular fund-based credit facilities to the beneficiary.
- Bills purchased/discounted/negotiated under LC will be treated as an exposure on the LC issuing bank and not on the borrower.
- While purchasing / discounting / negotiating bills under LCs or otherwise, banks should establish genuineness of underlying transactions/documents.
- The practice of drawing bills of exchange claused 'without recourse' and issuing letters of credit bearing the legend 'without recourse' should be discouraged because such notations deprive the negotiating bank of the right of recourse it has against the drawer under the NI Act.
- Accommodation bills should not be purchased/discounted/negotiated by banks.
- Banks should be circumspect while discounting bills drawn by front finance companies set up by large industrial groups on other group companies.
- Bills rediscounts should be restricted to usance bills held by other banks.
- Banks may exercise their commercial judgment in discounting of bills of the services sector.

Factoring

- Method of financing the receivables of a **business enterprise**.
- The financier is called '**Factor**' and can be a financial institution.
- Banks are not permitted to do this business themselves but they can promote subsidiaries to do this. **Under factoring, the factor not only purchases the book debts/receivables of the client**, but may also control the credit given to the buyers and administer the sales ledger.
- The purchase of book debts/receivables can be with recourse or without recourse to the client.
- If without recourse, the client is not liable to pay to the factor in case of failure of the buyer to pay.

Forfaiting

- This is similar to factoring but is used only in case of exports and where the sale is supported by **bills of exchange/promissory notes**.
- **The financier discounts the bills and collects the amount of the bill from the buyer on due dates**. Forfaiting is always without recourse to the client. Therefore, the exporter does not carry the risk of default by the buyer.

Unit 4: Term Loans

Important Points about Term Loans

- **Working capital loans are normally sanctioned for one year** but are payable on demand. Term loans are payable as per the agreed repayment schedule, which is stipulated in the terms of the sanction. Therefore, **for the purpose of matching assets and liabilities of the bank, term loans are considered long term assets** while working capital loans are considered as short term assets.
- **Banks provide term loans normally for acquiring the fixed assets like land, building, plant and machinery, infrastructure etc.,** (personal loans, consumption loans, educational loans etc. being exceptions)
- **As a term loan is expected to be repaid out of the future cash flows of the borrower, the D S C R assumes great importance while considering term loans,** while for working capital loans, the liquidity ratios assume greater importance.
- In exceptional cases, banks provide term loans for current assets This is called **Working Capital Term Loan (WCTL)**
- There is no uniform repayment schedule for all term loans. Each term loan has its **own peculiar repayment schedule depending upon the cash surplus of the borrower.**

Deferred Payment Guarantees (DPGs)

- **When the purchaser of a fixed asset does not pay to the supplier immediately, but pays according to an agreed repayment schedule,** and the bank guarantees this repayment, the guarantee is called **DPG.** This is a Non-fund based method for financing purchase of fixed assets.

Difference Between Term Loan Appraisal And Project Appraisal

The differences can be summarized as under:

- In project finance all the financial needs of the enterprise, including working capital requirements, are appraised. This is because the total requirement of long term funds includes margin money for working capital. After assessing the total requirement of long term funds, the banks decide upon the amount of term loan to be sanctioned and the contribution of the promoters.

Mock Tests

- If an existing enterprise wants to purchase a few machineries, which are not going to have a major impact on the volume or composition of the business, it will serve little purpose to have a detailed examination of techno- economic feasibility, managerial competence, I R R etc. It may be enough for the bank to examine the projections for next 2 to 3 years to find out that D S C R is at satisfactory level. In case of loans to individuals also, like housing loans, educational loans etc., it may be enough to examine the projected D S C R to judge the viability. However, the basic principles of appraisal of a project or a standalone term loan are not different and if one is clear about project appraisal, the appraisal of a standalone term loan proposal is even simpler.

Project appraisal

Project appraisal can be broadly taken in the following steps:

- Appraisal of Managerial Aspects
- Technical Appraisal
- Economic Appraisal

Appraisal of Managerial Aspects: The appraisal of managerial aspects involves seeking the answer to the following questions:

- What are the credentials of the promoters'?
- What is the financial stake of promoters in the project? Can they bring additional funds in case of contingencies arising out of delay in project implementation and changes in market conditions?
- What is the form of business organization? Who are the key persons to be appointed to run the business?

Technical Appraisal: The technical feasibility of a project involves the following aspects:

- Location
- products to be manufactured, production process
- availability of infrastructure
- provider of technology
- details of proposed construction
- contractor for project execution
- waste-disposal and pollution control
- availability of raw materials

Mock Tests

- marketing arrangements

Economic Appraisal: The economic or financial feasibility of a project involves the following aspects:

- **Return on Investment:** The usual methods used are the NPV, IRR, payback period, cost benefit ratio, accounting rate of return etc.
- **Break-even Analysis:** A project with a high break-even point is considered more risky compared to the one with lower break-even point.
- **Sensitivity Analysis:** As market conditions are uncertain, a small change in the prices of raw materials or finished goods may have a drastic impact on the viability of a project. Sensitivity analysis examines such impact.

Appraisal and Financial of Infrastructure projects

- Transport
- Energy
- Water & Sanitation
- Communication
- Social and Commercial Infrastructure

Types of Financing by Banks

- Take-out Financing
- Inter-institutional
- Financing Promoter's Equity

Appraisal

- **In respect of financing of infrastructure projects undertaken by Government owned entities, banks or Financial Institutions** should undertake due diligence on the viability of the projects. Banks should ensure that the individual components of financing and returns on the project are well defined and assessed. State government guarantees may not be taken as a substitute for satisfactory credit appraisal and such appraisal requirements should not be diluted on the basis of any reported arrangement with the Reserve Bank of India or any bank for regular standing instructions or periodic payment instructions for servicing the loans or bonds.
- **Infrastructure projects** are often financed through Special Purpose Vehicles. Financing of these projects would, therefore, call for special appraisal skills on the part of lending agencies. Identification of various project risks, evaluation of

Mock Tests

risk mitigation through appraisal of project contracts and evaluation of creditworthiness of the contracting entities and their abilities to fulfill contractual obligations will be an integral part of the appraisal exercise.

- **In this connection, banks or Financial Institutions** may consider constituting appropriate screening committees or special cells for appraisal of credit proposals and monitoring the progress or performance of the projects.

Prudential Requirements

- Prudential Credit Exposure Limits
- Assignment of Risk Weight for Capital Adequacy Purposes
- Asset Liability Management
- Administrative arrangements

Take-out Financing or Liquidity Support

- Take-out Financing or Liquidity Support
- Liquidity support from IDFC

Unit 5: Credit Delivery

Credit Delivery

Documentation

- The documents should be **properly stamped**
- The date of execution of documents should never be earlier than the date of stamping. **Date and place** of execution should be **properly mentioned in the documents.**
- It should be ensured that the parties executing the documents have the necessary authority and the capacity to enter into a contract and executed the documents in that capacity. **For example**, a partner should sign on behalf of the firm and not in his individual capacity.
- It should be ensured that the person signing the **documents is doing so with his free will**

Mock Tests

- The documents should be filled in before these are signed.
- **In case of companies**, the charge should be registered with ROC. Within 30 days from the date of execution of the documents.
- **If any document is required** to be registered with the Sub-registrar, it should be done within the prescribed time limit.

Third Party Guarantees

- While the **enterprise or individual, who has taken the loan from the bank is legally bound to repay the principal and the interest**, in some cases, banks stipulate guarantees of third parties, as an additional safety against default.
- **These third parties can be individuals or any other legal entity**. In case of finance to firms, the personal guarantee of proprietor or partners is not stipulated as they have unlimited liability and their personal assets can be attached for recovery of bank loans.

Charge Over Securities

- Mortgage
- Hypothecation Pledge
- Lien
- Assignment
- Pledge

Disbursal of Loans

Working Capital Loans

In case of sole banking, the bank providing working capital limits opens a cash credit account of the borrower and all his financial transactions should be routed through this account. Without bank's permission, no account can be opened with any other bank. Banks give permission to open current account with other bank only if they are convinced about its necessity. In such cases, periodic statements of that account are obtained to keep a tab on the transactions.

With this, if the borrower wants to draw very little amount or no amount, there will be debit in the loan account (fixed amount) while the cash credit account may have credit balance. **RBI guidelines in this respect are as follows:**

- In the case of borrowers enjoying working capital credit limits of **Rs 10 crore and above** from the banking system, the loan component should normally be **80 percent**. **Banks**, however, have the freedom to change the composition of working capital by increasing the cash credit component **beyond 20 percent or to increase the 'Loan Component' beyond 80 percent, as the case may be, if they so desire**. Banks are expected to appropriately price each of the two components of working capital

Mock Tests

finance, taking into account the impact of such decisions on their cash and liquidity management.

- In the case of borrowers enjoying working capital **credit limit of less than Rs. 10 crore, banks may persuade them to go in for the 'Loan System'** by offering an incentive in the form of lower rate of interest on the loan component, as compared to the cash credit component. The actual percentage of 'loan component' in these cases may be settled by the bank with its borrower clients.
- In respect of certain business activities, which are cyclical and seasonal in nature or have inherent volatility, the strict application of loan system may create difficulties for the borrowers. Banks may, with the approval of their respective Boards, identify such business activities, which may be exempted from the loan system of delivery.

Term loans

RBI guidelines in respect of disbursement of project loans are as under:

'At the time of financing projects banks generally adopt one of the following methodologies as far as determining the level of promoters' equity is concerned.

- Promoters bring their entire contribution upfront before the bank starts disbursing its commitment.
- Promoters bring certain percentage of their equity (**40% — 50%**) upfront and balance is brought in stages.
- Promoters agree, ab initio, that they will bring in equity funds proportionately as the banks finance the debt portion.

Syndication of Loans

- The term '**Syndication**' is normally used for sharing a long-term loan to a borrower by two or more banks. This is a way of sharing the risk, associated with lending to that borrower, by the banks and is generally used for large loans. The borrower, intending to avail the desired amount of loan, gives a mandate to **one bank (called Lead bank)** to arrange for sanctions for the total amount, on its behalf.
- **The lead bank approaches various banks** with the details. These banks appraise the proposal as per their policies and risk appetite and take the decision. The lead bank does the liaison work and common terms and conditions of sanction may be agreed in a meeting of participating banks, arranged by the lead bank. Normally, the lead bank charges '**Syndication fee**' from the borrower.

Unit 6: Credit Control and Monitoring

Important and Purpose

Credit control and monitoring, often referred as Loan Review Mechanism (L R M), plays an important role in the following aspects:

- To ensure that the funds provided by the bank are put to the intended use and continue to be used properly.
- To ascertain that the business continues to run on the projected lines.
- If the deterioration of the business continues despite appropriate action, the bank should decide if any harsh action like, recalling the advance or seizing the security, etc. is necessary.

Available Tools for Credit Monitoring / LRM

- Conduct of the Accounts with the Bank
- Periodic Information Submitted as per the Terms of the Advance
- Audit of Stocks and Receivables Conducted by the Bank
- Financial Statements of the Business, Auditors' Report
- Periodic Visits and Inspection
- Interaction
- Periodic Scrutiny
- Market Reports about the, Borrower and the Business Segment
- Appointing Bank's Nominee on Company's Board
- Credit Audit
- Document Audit of title documents in respect of large value loan accounts (RBI circular dated June 7, 2013)

Unit 7: Risk Management and Credit Rating

Credit Risk Monitoring

The risks faced by the business of banking can be classified into three broad categories;

- **Operational Risks:** The examples of such risks are losses due to frauds, disruption of business due to natural calamities like floods etc.

Mock Tests

- **Market Risks:** These are the risks resulting from adverse market movements of interest rates, exchange rate etc.
- **Credit Risks:** The credit risk can be defined as the unwillingness or inability of a customer or counterparty (e.g. the L C opening bank in a bills negotiation transaction under that L C) to meet his commitment relating to a financial transaction with the bank.

Factors Affecting Credit Risk

- **External Factors:** These factors affect the business of a customer and reduce his capability to honor the terms of financial transaction with the bank. The main external factors affecting the overall quality of the credit portfolio of a bank are exchange rate and interest rate fluctuations, Government policies, protectionist policies of other countries, political risks, etc.
- **Internal Factors:** These mainly relate to overexposure (concentration) of credit to a particular segment or geographical region, excessive lending to cyclical industries, ignoring purpose of loan, faulty loan and repayment structuring, deficiencies in the loan policy of the bank, low quality of credit appraisal and monitoring, and lack of an efficient recovery machinery.

Steps Taken To Mitigate Credit Risks

The major objective of credit risk management is to limit the risk within acceptable level and thus maximize the risk adjusted rate of return on the credit portfolio.

Following are the main steps taken by any bank in this direction;

- **Macro Level:** The risks to the overall credit portfolio of the bank are mitigated through frequent reviews of norms and fixing internal limits for aggregate commitments to specific sectors of the industry or business so that the exposures are evenly spread over various sectors and the likely loss is retained within tolerable limits. Bank also periodically reviews the loan policies relating to exposure norms to single and group borrowers as also the structure of discretionary powers vested with various functionaries.
- **Micro Level:** This pertains to policies of the bank regarding appraisal standards, sanctioning and delivering process, monitoring and review of individual proposals/categories of proposals, obtention of collateral security etc.

Credit Ratings

The level of credit risk involved in each loan proposal depends on the unique features of that proposal. Two similar projects, with different promoters, may be appraised by a bank as having different credit risks. Similarly, two different projects, with same promoters, may also be appraised by the bank as having different credit risks. While

Mock Tests

appraising a credit proposal, the risk involved is also **measured and often quantified by way of a rating with the following objectives;**

- To decide about accepting, rejecting or accepting with modifications/ special covenants
- To determine the pricing, i.e. the rate of interest to be charged
- To help in the macro evaluation of the total credit portfolio by classifying it on the ratings allotted to individual accounts. This is used for assessing the provisioning requirements, as also a decision making tool, by the management of the bank, for reviewing the loan policy of the bank.

Internal and External

- **Most of the banks in India have set up their own credit rating models as till recent past**, the rating agencies were not equipped well enough to provide the ratings, so reliable as to banks depending on these for credit decisions. However, with experience gained in last few years, these rating agencies have gained confidence of the banks.
- A few of such rating agencies are **CARE, ICRA, CRISIL and SMERA.**

Methodology of Credit Rating

- Promoters/Management aspects and the securities available
- Financial aspects based on analysis of financial statements
- Business/project risks

Use of Credit Derivatives For Risk Management

- **Credit Default Swaps (CDSs):** This is a bilateral contract in which the risk seller (lending bank) pays a premium to the buyer for protection against credit default or any other specified credit event. Normally, CDS is a standardized instrument of ISDA (International Swaps and Derivatives Association).
- **Credit Linked Notes (CLN):** In this, the risk seller gets risk protection by paying regular premium to the risk buyer, which is normally a SPV which issued notes linked to the underlying credit. These notes are purchased by the general investors and the money received from them is used by the SPV to buy high quality securities.

Credit Information System

Credit Information Companies (CIC's)

Mock Tests

- **CIC or Credit Information Company is an independent third party institution that collects financial data regarding loans, credit cards and more about individuals and shares it with its members.** Banks, Non-Banking Financial institutions are usually the customers of Credit Information Companies.
- The Credit Card Company collects financial information about all these individuals and forms a credit report based on their financial history. This credit report plays a very important role as it helps banks and other financial institutions determine the creditworthiness of an individual applying for a loan or credit card with them.

Credit Information Companies Regulation Act (CIC Act)

- **Credit Information Companies in India are licensed by the Reserve Bank of India** and governed by the **Credit Information Companies Regulation Act, 2005** and various other rules and regulations issued by the Reserve Bank of India.
- The CIC Act, 2005 is a legislation that is enacted by the Government of India, in order to regulate the actions of the Credit Card Companies in India. Following the **CIC Act, 2005, the RBI and the Government of India enacted the CIC Act, 2006.**

List of Credit Information Companies In India

There are exactly four well known CICs in India as of now. Given below is a list of CICs in India:

- CIBIL
- Equifax
- Experian

Rules and regulations for CIC's

The actions of Credit Information Companies is regulated by the **Credit Information Companies Regulation Act, 2005**, enacted by the Government of India. Following the CIC Act of 2005, the RBI and the Government of India followed up with the Credit Information Companies, **Regulations and Rules Act, 2006.**

According to the Act, only certain entities are allowed to be members of the Credit Information Companies. Given below is a list of entities that can be members of CICs.

- Credit Institutions under **Section 2(f) of CIC Act.**
- Credit information companies under **section 2(e) of the CIC Act.**

Mock Tests

A CIC, a credit institution or any authorised individual can request for a credit report anytime. A CIC will adapt to a format approved by RBI during such instances and furnish the requested information within a given time.

If there is any dispute between the CIC and its member related to credit information, the dispute shall be settled by conciliation under the as provided in the **Arbitration and Conciliation Act, 1996**.

Unit 8: Rehabilitation/ Rehabilitation and Recovery

Credit Default/Stressed Assets/NPAs

Credit default means the inability or the unwillingness of a customer or counterparty to meet commitments in relation to lending, trading, or any financial transactions. ***This may take the following forms;***

- **In the case of direct lending:** principal and/or interest amount may not be repaid as per the terms of repayment.
- **In the case of guarantees or letters of credit:** funds may not be forthcoming from the constituents upon crystallization of the liability;
- **In the case of treasury operations:** the payment or series of payments due from the counter parties under the respective contracts may not be forthcoming or ceases;
- **In the case of securities trading businesses:** funds/securities settlement may not be effected;
- **In the case of cross-border exposure:** the availability and free transfer of foreign currency funds may either cease or restrictions may be imposed by the sovereign.

Non Performing Assets (NPAs)

As per RBI directives, banks in India have to classify their assets into Performing or Standard assets or Non performing assets (NPAs). NPAs are further classified into **(a) Sub-standard, (b) doubtful and (c) loss assets.**

The classification is based on the period of default as also the availability of security. The amount of provision required to be made on the asset portfolio of a bank depends on its classification into the four categories of standard, sub standard, doubtful and loss.

Willful Defaulters

The default in payment as per agreed terms could be intentional or due to the reasons beyond the control of the borrower. **The intentional default is referred to as willful default. As per RBI guidelines, a 'willful default' would be deemed to have occurred if any of the following events is noted:**

Mock Tests

- The **unit has defaulted in meeting** its payment or repayment obligations to the lender even when it has the capacity to honour the said obligations.
- The unit has defaulted in meeting its **payment or repayment obligations to the lender and has not utilized the finance**, borrowed for the specific purposes for which the finance was availed of but has diverted the funds for other purposes.
- **The unit has defaulted in meeting its payment or repayment obligations to the lender and has siphoned off the funds so that the funds have not been** utilized for the specific purpose for which finance was availed of, nor are the funds available with the unit in the form of other assets.
- **The unit has defaulted in meeting its payment or repayment obligations to the lender and has also disposed off or removed the movable fixed assets or** immovable property given by him or it for the purpose of securing a term loan without the knowledge of the bank or lender.

Options Available To Banks for Stressed Assets

Every credit default does not necessarily result in loss to the bank. In many cases, bank may be able to **recover its dues fully**. In other cases, the recovery may be with some loss or, in the worst scenario there may be no recovery at all.

The timely action and an appropriate strategy play very important role in achieving the best recovery for any stressed asset. While formulating the strategy, the bank has to keep in mind the legal system as also the social aspects prevailing in the country.

Normally, a bank follows the **following steps in case of a stressed asset:**

- Exit from the account
- Rescheduling or Restructuring
- Rehabilitation
- Compromise
- Legal action
- Write off

Legal Action: In cases where even the compromise does not materialize, banks have to initiate recovery proceedings. The forums available to the banks are as under;

- Government Machinery
- Civil Courts
- Lok Adalats
- Debt Recovery Tribunals (DRTs)
- SARFAESI Act, 2002

Corporate Debt Restructuring (CDR)

Mechanism

Mock Tests

The **CDR Mechanism** has been designed to facilitate restructuring of advances of borrowers enjoying credit facilities from more than one bank/Financial Institution (FI) in a coordinated manner. The CDR Mechanism is an organizational framework institutionalized for speedy disposal of restructuring proposals of large borrowers availing finance from more than one bank/FI. This mechanism will be available to all borrowers engaged in any type of activity **subject to the following conditions:**

1. The borrowers enjoy credit facilities from more than one bank or FI under multiple banking or syndication or consortium system of lending.
 2. The total outstanding (fund-based and non-fund based) exposure is **Rupees 10 crores or above. C D R system in the country will have a three tier structure**
- **C D R Standing Forum:** The C D R Standing Forum would be the representative general body of all financial institutions and banks participating in C D R system. All financial institutions and banks should participate in the system in their own interest. C D R Standing Forum will be a self-empowered body, which will lay down policies and guidelines, and monitor the progress of corporate debt restructuring.
 - **CDR Empowered Group:** The individual cases of corporate debt restructuring shall be decided by the CDR Empowered Group, consisting of E D level representatives of Industrial Development Bank of India Ltd., ICICI Bank Ltd. and State Bank of India as standing members, in addition to E D level representatives of financial institutions and banks who have an exposure to the concerned company.
 - **CDR Cell:** The CDR Standing Forum and the CDR Empowered Group will be assisted by a CDR Cell in all their functions. The CDR Cell will make the initial scrutiny of the proposals received from borrowers/creditors, by calling for proposed rehabilitation plan and other information and put up the matter before the CDR Empowered Group, within one month to decide whether rehabilitation is prima facie feasible.

