

Text Book for

RPSC-AEn

Rajasthan Public Service Commission-Assistant Engineer

Main Examination (Paper-2) for Civil, Electrical and Mechanical Engineering

SOCIAL ASPECTS OF ENGINEERING

HIGHLIGHTS

- ✍ As per RPSC-AEn Mains Syllabus.
- ✍ Previous year solved question Papers with detailed solutions.
- ✍ This book is cover State Engineering Service Exams.



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DEVELOPMENT PROCESS

THEORY

1.1 | SOCIAL DEVELOPMENT

Social development is intuitively related with those changes in the system that improves the general well-being of its people.

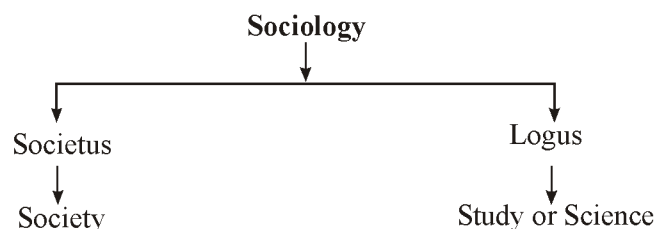
Development is a natural process that is related with an improvement of society. Social development on the other hand, is related with changes in the social environment that curbs this tendency. We sustain that social, economic, institutional and cultural development are related with a balance of power and interest with the population, which promotes the general good over the personal good, thus improving the general well-being of the population.

Social development doesn't depend on any political, social or economic ideology. Development is a natural occurrence in the physical world and so it is social development. Societies can either develop, remain stationary or regress depending on inhibiting or facilitating internal factors to the system or external factors to the surrounding environment.

1.2 | SOCIAL ENGINEERING

"Social Engineering" is not a new term. It comes from the field of social control. Social Engineering can refer to the process of redefining a society or more correctly, engineering society, to achieve some desired outcome.

The term can also refer to the process of attempting to change people's behaviour in a predictable manner, usually in order to have them comply with some new system.



Example: (i) Indian Society

(ii) Western Society

Difference in terms of dress, customs and conventions.

Note: The process of change in structure of society is called dynamism.

1.2.1 | SOCIOLOGY

Sociology is a body of learning about society. It is a description of ways to make society better. It is social ethics, a social philosophy.

A simple definition of sociology here is that it is the study of society and culture. The concepts of "Society and culture" are central in sociology.

Distinguishing between Society and Culture

- **Society** : A group of people who lives within some type of boundary territory and who share a common way of life.
- **Culture** : Culture is common way of life shared by a society of group.

Thus Sociology may be generally defined as a social science that studies such kind of phenomena as:

- The structure and function of society as a system.
- The nature, complexity and contents of human social behaviour.
- The fundamentals of human social life.
- Interaction of human beings with their external environment.
- The indispensability of social interactions for human development.
- How the social world affects us etc.

Definition of sociology by different Sociologist

- (i) **George Simmel** Opines that it is a subject which studies human inter-relationship.
- (ii) **Giddins** is of view that "Sociology is Scientific study of Society."
- (iii) **Max Weber** has viewed sociology as "Science which attempts imperative understanding of social actions."
- (iv) **Sorokin** is of the opinion that sociology is a study first of all the relationship and correlation between various classes, second between the social and non social aspects of life and third it studies general characteristic common to all classes of society.
- (v) **Ogburn** has said that, "Sociology is concerned with the study of social life and its relations to the factors of culture, natural environment, heredity and group."
- (vi) **Durkheim** while defining sociology has said that "it is the science of collective representation."

1.2.2 | DEVELOPMENT PROCESS

Development means increase in both material and non-material things necessary for existence and improvement of man living on this planet. Man includes all types of species process means ways and methods adopted and a number of input that are required by the society to achieve the development.

The material and quality of life which includes level of education, hygienic conditions of life, social and ethical values are equally important in the process of development.

"Development or Process Means Change"

According to world development report (given by world bank in 1991), a better quality of life in world's poor countries calls for higher income-but it involves much more. It encompasses better education, higher standards of health and nutrition, less poverty, a cleaner environment, more quality of opportunities.

Development is understood in terms of the following :

- Social
- Political
- Economic
- Environmental

Social development, process of growth and development of the capacities of the people and the improvement of society in which they live in order to obtain a better life for all.

Political development, process of increasing rationality, equality, participation and secularization in the political system.

Economic development, discussed in terms of economic growth although economist were aware of non-economic factors.

Development means rising trend of real national income over a long period of time. It means that if the national income of a country which is also called GNP (Gross national product) increases then the country will be materially well off, because the nation shall have more and more things of day to day life upon which standard of the living of the people depends.

If the national income of a country increase say x-₹ crores to y-₹ crores per annum and does not get distributed properly among all the people in a desirable manner then it is not called development, so increase in per capita income that is the income of per person is essentially an index of the development. This system ensure balanced development.

Real development in which increase in the GNP (Gross national product) and distribution simultaneously

- There should be sustainable (For long period of time) development.
- The development should be consistent and persistent. (Continuous increase in real per capita income)
- Output produced should proper ratio of capital goods and consumer goods.

Example : What is development process?

Solution: Development means change. The term development and growth are one and the same thing. Both can be used interchangeably in the discussion and explanation of this chapter. Development means rising trend of real national income over a long period of time. It means that if the national income of a country which is also called GNP (Gross **National Product**) increases then the country will be materially well off because the nation shall have more and more things of day to day life upon which the standard of living of the people depends. One thing is worth mentioning here that national income (income of the nation) is the monetary expression of material and non-material things called GNP. Material things are those which can be touched like furniture, machines and a large number of non-material goods like services etc. But this is not the perfect definition of development. A few points mentioned below must necessarily be taken into account with regard to the term development used:

- (i) If the national income of a country increases say from ₹500 crores to ₹1000 crores per annum and does not get distributed properly among all the people in a desirable manner then it is not called development. So increase in per capita income that is the income of per person is essentially an index of the development. This system ensures balanced development.
- (ii) Secondly, an increase in national income and per capita income should be real which means price should be controlled. If the per capita income of people increases and at the same time cost of living index goes up then it will not be called development but stagnation or may be retardation because the standard of living of the people shall remain the same. So far real development is concerned there should be an increase in the GNP and the distribution should be even also.

- (iii) Thirdly, an increase in real per capita income should be over a long period of time as fluctuating change (that is in one year rise and an another year fall) do not constitute real development. There should be sustained development.
- (iv) Fourthly, development should be consistent and persistent. In other words there should be continuous increase in the real per capita income. And this increase should be over a long period of time.
- (v) Lastly, the output so produced constituting GNP should include the proper ratio of capital goods and consumer goods.

Keeping all the above points in view a concise definition of development could be that development or growth means rising trend of real per capita income over a long period of time with controlled cost of living index and population growth with reduction in inequalities of income and ensured increased standard of living and social welfare of people. The basic parameters described with regard to development or growth are life-sustenance (provision of basic needs of people), self-esteem (feeling of self respect) and freedom.

1.2.3 | PARAMETERS (INDEX) OF SOCIAL ECONOMIC DEVELOPMENT

- I. Increase in real per-capita income :
 - This is national Income divided by Population.
- II. The extent to which national income has increased and what growth rate of this income.
- III. What is the share of National income coming from
 - Primary Sectors
 - Secondary Sectors
 - Tertiary Sectors (Services) of the country.
- IV. Extent of
 - Urbanisation
 - Literacy
 - Education Rate
- V. Extent of infrastructure Facilities such as
 - Transport & Communication
 - Energy
 - Water supply and
 - Electricity etc.
- VI. To what extent application of Science and Technology is made and what is the magnitude of research in the various field.
- VII. What type of man power the country has been able to possess. In other words how many engineers, doctors and professional do a nation has.
- VIII. There should be multi dimensional development and people should have scientific temperament and cultural attitude.

1.7.1 | SUSTAINABLE DEVELOPMENT

Continuous development over a long period of time without fluctuations in the rising trend of real national income of a country and this is called sustainable development.

If the national income of a country increases in one year but falls in the subsequent year then it is not called economic development of sustainable level.

1.7.2 | METHODS OF INDEXING QUALITY OF LIFE

- Increase in real per capita income that is national income divided by population is a generally accepted way of indexing quality of life.
- The extent to which national income has increased and what is the growth rate of this income.
- What is the share of national income coming from the primary, secondary and tertiary sectors of the country.
- What is the extent of urbanization, literacy and education rate.
- How much and to what extent infrastructural facilities have been created. These facilities pertain to transport and communication, energy, water supply and electricity etc.
- To what extent application of science and technology is made and what is the magnitude of research in the various fields.
- What type of man power the country has been able to possess. In other words how many engineers, doctors and professionals does a nation have.
- These should be multi-dimensional development and people should have scientific temperament and cultural attitude.

1.7.3 | VARIABLES NEEDED TO IMPROVE QUALITY OF LIFE

- Health
- Education
- Culture
- Housing
- Environment
- Security
- Employment and Working conditions
- Income, consumption, wealth
- Social welfare
- Adequate nutrition

1.8 | NATIONAL INCOME CONCEPTS

National income estimates are the most reliable macroeconomic indicators of an economy. Therefore, it is essential for students to be aware of National Income Concepts. Changes in national income measure the rate of growth of the economy.

Similarly, changes in the structure of national income of an economy reflect the changing significance of different sectors. In India, national income, as also per capita income, have been continuously increasing. In more recent years, the rate of growth of national income has accelerated. It indicates that the economy has been growing at a faster rate in recent years than in the past. Along with this, the structure of national income has also undergone a change, the tertiary sector has emerged as the dominant sector of the economy.

- Factor determining development processes are
 - (i) Natural Resources
 - (ii) Human Resources
 - (iii) Capital Formation
 - (iv) Technology Transfers
 - (v) Social and Non-economic factors.
- Role of science and Technology is important in the process of development because it provides all types of infrastructure facilities necessary for growth.
- Quality of life include two aspects viz; QOL and PQOL is an inclusive concept which cover all aspects of living including material satisfaction of vital needs whereas PQOL include quantitative requirements.
- Planning is an important component of development activities. Planning helps in making better decisions directed towards development and growth.
- Continuous development over long period of time without the situation in the rising trend of GNP with controlled and checked environmental degradation refer to sustainable development.

Example: Define Gross National Product (GNP).

[RPSC AEn-2013 : 2 Marks]

Solution: GNP is the value of all Goods and Services made by a country's residents and businesses regardless of production location.

GNP counts the investment made by indian resident and businesses, both inside and outside the country.

$$\text{GNP} = \text{GDP} + \text{Income from abroad.}$$





RURAL ECONOMY

THEORY

2.1 | INTRODUCTION

India is predominantly a rural country with two third populations and 70% workforce residing in rural areas. Rural economy constitutes 46% of national income and most of the population of villages depends on agriculture. Agriculture forms the backbone of the country's economy. The agricultural sector contributes most to the overall economic development of the country.

For centuries together, the Indian village has been a self-sufficient and self-contained economy. During the past forty years, **rural reconstruction and development** have been the major thrust of economic planning, which has caused a rapid transformation in the Indian rural economic structure. These changes have taken place in spheres such as land reforms, agriculture, animal husbandry, supplies and marketing, village industries, rural leadership, village administration etc. With the help of the rural development programmes, a cultivator is able to take advantage of the modern technological facilities in his agricultural operations. These cultivators are now using modern agricultural implements and high yielding varieties of seeds and fertilizers.

Thus rural economy holds significant potential for creating decent and productive jobs and contributing to sustainable development and economic growth. It accounts for a significant share of employment and output in many developing countries. Thus growth and development of rural economy and population is a key to overall growth and inclusive development of the country.

Traditionally, agriculture is the prime sector of rural economy and rural employment. The transition in composition of output and occupation from agriculture to more productive non-farm sectors is considered as an important source of economic growth and transformation in rural and total economy.

Changes in rural economy during the past four decades due to following reasons:

(i) **Commercialization of Agriculture :**

In the present days, a large part of rural economy has been opened up, which has made commercialization of agriculture possible. The extent of commercialization of agriculture in rural economy marks the stage of its development.

The major factors contributed to the commercialization of agriculture are as follows:

- High production and productivity gains have turned out agriculture to be a profitable proposition.
- Increase in production was possible due to the use of advanced technology in agricultural operations.
- Massive expansion of road transport has reduced the distance between rural and urban areas.
- Development of regulated markets and cooperative marketing structure has helped the farmers to break away from village system of moneylenders and middlemen.

(ii) Rural Society Under the Impact of Urbanism :

The past five decades has witnessed the rural society of India in getting exposed to the waves of urbanism. Most of the features of urban areas have been modified and diluted into the rural society. This has led to a new way of urbanism called rural-urbanism. Urbanism also created new social institutions, which were absent in the traditional rural set up. Urbanism has also brought about modernization.

The means of communication such as radio, transistor, television and telephones have brought the remote villages nearer to the urban towns and contacts between the rural and urban areas have been increased due to the development of the means of transportation. Increase in the contacts between the rural and urban areas has enabled a quick assimilation of rural areas with the mainstream of urban life.

Earlier the demand of rural India to the industrial goods was limited only to the basic necessities however the situation has changed now. Today rural India is seen as the potential market to the industrial goods. Observing such a situation, many industries have been flourished in rural areas which are rich in the resources needed for the setting up of industries.

Two reasons can be attributed to such a situation. Firstly, contacts with the urban areas have created awareness among the rural masses about consumer goods. Due to green revolution, the income levels of the rural people have increased which encourages such consumption of goods possible. Secondly the new agricultural technology has resulted in the green revolution. It supplies the industrial goods such as fertilizers, machinery, etc. There is also an increasing demand for the repair services and workshops, which is inevitable, when there is a supply of industrial goods. **Thus, the above mentioned reasons have created an increasing demand for industrial manufacturers in rural India.**

(iii) Institutional Participation :

After independence, the state had taken the responsibility of rural reconstruction and development. It had brought about important changes in the production relations. Abolition of intermediaries, security of tenancy, ceiling on holdings etc. were some of the important legislations made which improved the relations of production. A number of rural development programmes were taken up. These programmes also contributed in bringing about modernization in villages.

2.2 | CHANGES IN RURAL ECONOMY

Non-agriculture sector emerged as dominant sector. Non-farm sector is no longer a residual sector, but an emerging driver of the rural economy. Labour moving from agriculture towards non-agricultural activities.

2.2.1 | CHANGES IN RURAL EMPLOYMENT STRUCTURE

About half of the national income and more than two third of the total employment is generated in rural areas. Apart from producing almost all agricultural output, rural areas contributes about half of the manufacturing and construction sectors output and one quarter of the services sectors output in the country. Workers moving out of agriculture and those entering rural labour-force are getting largely absorbed in construction activity. Most of the labour-intensive manufacturing sub-sector is wearing apparel, tobacco products, textile, non-metallic mineral products, food products and beverages.

Rural labours are engaged in multiple occupations. Most of the small and marginal farmers participate in both farm and non-farm wage work. Landless labour, small and marginal farmers depend on multiple sources of income – smaller the farm size greater is the non-farm sources of income.

2.2.2 | BONDED LABOUR AND CHILD LABOUR

- Almost disappearance of bonded and attached labour.
- Changing contractual arrangement of rural labour.
- Casual labour is predominant but increasingly shifting from daily wage to piece rate or contractual work.
- Increasing bargaining power of labour.

2.2.3 | MGNREGA AND RURAL LABOUR MARKET

MGNREGA emerged as an important source of rural employment for the poor households. It provided equal wage for male and female workers which have reduced gender based wage disparity.

2.3 | SECTOR-WISE CHANGES IN RURAL ECONOMY**2.3.1 | AGRICULTURE**

Between 2004–05 and 2011–12, India for the first time witnessed a reduction in the workforce in agriculture. The rate of decline was 2.04%. Despite this, agriculture employed 64% of the total rural workforce who produced only 39% of the total rural output in 2011–12. Millions of agricultural workers were required to be shifted to non-farm sectors in rural areas in 2011–12. This amounts to almost 70% increase in non-farm employment which looks quite challenging.

2.3.2 | MANUFACTURING

Manufacturing output in rural areas registered annual growth rate of 5.18% in between 1970-71 and 1993-94. The post-reform period (1993-94 to 2004-05) witnessed higher growth rate of 8.38 %, which further accelerated sharply to 15.87% during 2004-05 to 2011-12. Significantly higher growth in manufacturing compared to other sectors raised its share in rural Net Domestic Product (NDP) from 5.9% in 1970-71 to 18.4% in 2011-12 pointing to a clear trend towards **industrialization in rural areas**.

Between 1972–73 and 1993–94, manufacturing sector added 10.29 million jobs (29% of incremental non-farm jobs) and its share in total rural employment increased from 5.3% in 1972–73 to 7% in 1993–94. During the next decade (post-reform period) the sector added 7 million jobs (23.4% of incremental non-farm jobs). Between 2004–05 and 2011–12, employment in the manufacturing sector increased merely by 1.2 million (4.9% share in incremental non-farm jobs). This leads to the inference that manufacturing sector in rural areas used more **capital-intensive production technology** as compared to the urban areas after 2004-05.

2.3.3 | SERVICES SECTOR

Services sector was found to be the second largest contributor of output and employment in rural areas. The sector contributed about 27.0% of the total rural output and engaged 15.5% of the rural workforce in the year 2011-12. Services sector registered 5.94 and 6.10% annual growth in its real NDP during the pre-reform period in urban and rural areas respectively. The growth accelerated to 8.94 and 8.55% respectively during the post-reform period (1993-94 to 2004-05).

2.3.4 | CONSTRUCTION

Rural areas are characterised by poor infrastructure and civic amenities. Similarly, a large percent of houses are in need of up gradation. These facts indicate considerable scope for growth of construction sector in rural areas. The real NDP of construction sector increased at the annual rate of 3.94% between 1970-71 and 1993-94. During the successive periods, 1993-94 to 2004-05 and 2004-05 to 2011-12, growth rate in construction sector output accelerated to 7.92 per cent and 11.49 per cent, respectively. Consequently, the share of construction sector in rural output increased from 3.5% in 1970-71 to 10.5% in 2011-12.

Employment in construction sector increased 13 times during the past four decades, leading to a significant increase in its share in total rural employment from 1.4% in 1972-73 to 10.7% in 2011-12. This sector absorbed 74% of the new jobs created in non-farm sectors in rural areas between 2004-05 and 2011-12. These trends indicate that rural areas witnessed a construction boom after 2004-05, which is desirable in terms of creation of necessary infrastructure for the economic development. Further, growth in employment in construction sector was higher than output growth during both the periods under consideration. One of the reasons for the much higher growth in rural workers in construction over manufacturing or services sectors are fewer requirements of skills and education in construction activities.

2.4 | POVERTY

Poverty refers to a state in which an individual is unable to fulfil even the basic necessities of life. The minimum requirement includes food, clothing, shelter & health facilities. The main determinants of poverty in a country like India are generally reflected in terms of:

- (i) Lack of income due to a lack of productive employment and under employment.
- (ii) Increasing prices of food grains which constitute the major item in the consumption basket.
- (iii) Inadequate social infrastructure affecting the quality of life of the people and their ability take up gainful employment.

Poverty is often defined by one-dimensional measures such as income. But no one indicator alone can capture the multiple aspects that constitute poverty. The Multidimensional approach to measure poverty developed by the UNDP since 2010 has replaced the earlier Human Poverty Index. Multidimensional poverty is made up of several factors that constitute poor people's experience of deprivation such as poor health, lack of education, inadequate living standard, lack of income, disempowerment, poor quality of work and threat from violence.

2.4.1 | TYPES OF POVERTY

Poverty is generally of two types :

(i) Absolute Poverty :

It is synonymous with destitution and occurs when people cannot obtain adequate resources which are measured in terms of calories or nutrition, to support a minimum level of physical health. Absolute poverty means about the same everywhere, and can be readicated as demonstrated by some countries. Thus the concept of absolute poverty is based on absolute norms for living (measured in terms of consumption expenditure) laid down according to specified minimum standard and all such individuals or groups whose consumption expenditure is found to be below this standard are classified as poor. This concept is directly related to the minimum level of consumption.

(ii) Relative Poverty :

Relative poverty occurs when people do not enjoy a certain minimum level of living standards as determined by a government (and enjoyed by the bulk of the population) that vary from country to country, sometimes within the same country. Under the relative concept of poverty, a family (or an individual) is deemed to be poor if its level of income or consumption expenditure falls below a predetermined level. Then the income distribution of the population in different groups is estimated and comparison is made between the level of living of people in the bottom layer and the top layers of the population to assess the relative standard of poverty. the concept of relative poverty has received little attention. The concept of relative poverty is more suitable for developed countries while the absolute concept is relevant for the developing countries.

Note: In addition, the concept of poverty has two connotations, namely, individualized poverty and collective poverty. the concept of individualized poverty is concerned with those poor individuals who are not able to incur even the minimum expenditure on most essential items viz., food, clothing and housing and collective poverty refers to social systems.

2.4.2 | INTERNATIONAL POVERTY LINE

The international poverty line is a monetary threshold under which an individual is considered to be living in poverty. It is calculated by taking the poverty threshold from each country - given the value of the goods needed to sustain one adult - and converting it into dollars. The international poverty line was originally set to roughly \$1 a day.

The World Bank sets the international poverty line at periodic intervals as the cost of living for basic food, clothing, and shelter around the world changes. In the 2008 update, the poverty line was set at \$1.25 per day. In 2015, the threshold was updated to \$1.90 per day. That figure was set based on prices established in 2011 and that threshold should reflect that same "buying power that was set with the earlier poverty line. According to the World Bank, in 2012, more than 900 million people were estimated to be living under the international poverty line. Based on data projections, the World Bank also estimated that more than 700 million people lived in extreme poverty as of 2015. According to the Modified Mixed Reference Period (MMRP) concept proposed by World Bank in 2015, India's poverty rate for period 2011 -12 stood at 12.4% of the total population, or about 172 million people; taking the revised poverty line as \$1.90.

2.4.3 | POVERTY GAP

According to the World Bank, poverty gap is the mean shortfall from the poverty line (counting the non-poor as having zero shortfall), expressed as a percentage of the poverty line. Poverty gap measures the intensity of poverty. It shows the extent to which individuals on average fall below the poverty line. The concept of poverty gap was developed by the World Bank and is extensively used to measure the incidence of poverty in different countries. As per the World Bank, India's poverty gap was 4.8 per cent in 2011.

2.4.4 | CAUSES OF POVERTY

- **Underdevelopment of the Indian Economy :**

The root cause of poverty is the under development of the Indian economy. The under development is manifested by the relative backwardness of agriculture and industrial sector. Widespread infrastructural bottle necks are result of slow pace of development. Nearly 20% of the population is still living below the poverty line. Rapid growth of population, particularly among the poor, is responsible for the problem of poverty in the country.

- **High Level of Unemployment :**

Poverty is caused by unemployment or unemployment coupled with a low rates of wages. More than six decades economic planning has failed to generate adequate employment opportunities in the industrial and service sector. Large unemployment has resulted in low levels of income and a large share of population lies below the minimum subsistence levels.

- **Inequalities of Income :**

An important cause of poverty in India is the existence of large inequalities in distribution of national income and concentration of economic power (both in rural and urban sectors of the economics). Efforts to reduce inequalities have been ineffective. The benefits of growth have been appropriated by the rich section and have not reached the poorest of the poor. So the rich become richer as their income rise and assets expanded.

- **Political Factors :**

Before Independence, India was exploited under the British rule. After Independence other political factors have adversely affected economic progress. Economic policies are formulated to promote the interest of the richer section of the society & poor people are suffers in the process.

- **Inflation:**

The steep and continuous rise in price, particularly of essential commodities has added to the miseries of the poor.

- **High Illiteracy Rate :**

Lower education result in lower income as there is a positive correlation between the two.

- **Underutilization of Resource:**

Due to the unexploitation natural resources of the country, poverty spreads throughout the country. Labour and land productivity continue to be low in India. Consequently, most of the farmers live in a state of poverty.

2.4.5 | POVERTY ESTIMATION IN INDIA

Poverty in India is big issue for the government. To measure exact numbers of poor people and per capita expenditure various methods had been adopted by Government of India. The official measure of Indian government, before 2005, was based on food security and it was defined from per capita expenditure of a person to consume enough calories and be able to pay for associated essentials to survive.

Poverty Estimation Committees in India

Lakdawala Committee	Tendulkar Committee	Rangarajan Committee
The committee was constituted in the year 1993.	The Committee was constituted in the year 2004-05	The Committee was constituted in the year 2012.
The criteria suggested by the committee was Calorie intake based on consumption expenditure.	The committee estimated poverty by using basic requirement of the poor such as housing, clothing, shelter, education, sanitation, travel expense and health etc., to make poverty estimation realistic. The committee suggested to do away with the calorie-based criteria. The committee also suggested to have a uniform poverty line across rural and urban India.	C Rangarajan expert group report, recommended a monthly per capita consumption expenditure of ₹972 in rural areas and ₹1,407 in urban areas as the poverty line at the all-India level. Assuming five members for a family, this will imply a monthly per household expenditure of ₹4,860 in rural areas and ₹7,035 in urban areas. The Rangarajan committee estimated a daily per capita expenditure of ₹32 and ₹47, in rural and urban areas respectively as the poverty line, and worked out poverty line at close to 29.5%.
As per Lakdawala committee the percentage of population living below poverty line in the year 2004 - 05 was: Rural: 28.3% Urban: 25.7% All India: 27.5%	As per Tendulkar report, the percentage of people living below poverty line in the year 2004-05 were as follows: Rural: 41.8% Urban: 25.7% Total 37.2% In the year 2011-12 Rural : 25.7%, Urban: 13.7% Total : 21.9%	The Rangarajan expert group estimates that 30.9 % of the rural population and 26.4% of the urban population were below the poverty line in 2011-12 . The all-India ratio was 29.5%.

- **Growth of Non-Farm Employment :**

For reduction of poverty, growth of non-farm employment in the rural areas is of special importance. Non-farm employment is created in marketing, transportation, handicrafts, dairying, forestry, processing of food and other agricultural products, repair workshops. There is significant reduction in rural poverty in spite of a reduction in employment opportunities in agriculture is due to the remarkable increase in non-farm employment.

- **Access to Credit :**

Adoption of new technology requires financial resources which are lacking with the small farmers. Besides it farmer need credit for marketing, food processing, dairying, forestry, development of handicrafts which can provide them gainful employment. Availability of credit to the poor on easy terms can create the conditions for small farmers gaining access to productive resources such as seeds fertilizers, construction of minor irrigation such as wells and tube wells. This will enable the small farmers to adopt high- yielding technology to raise their productivity.

- **Public Distribution System (PDS) :**

Poor households spend nearly 80 per cent of their income on food. Therefore, an effective way of raising rural incomes and ensuring food security to the poor households is an assured supply of adequate quantity of food-grains and other essential commodities at subsidised prices, that is, at prices which are lower than the market prices.

A properly functioning public distribution system which is targeted to the poor households is an important element of the strategy for poverty reduction. The Central Government Organisation 'Food Corporation of India' procures the food-grains from the farmers at the minimum support prices (MSP) and store them in their warehouses located throughout the country.

- **Direct Attack on Poverty (Special Employment Schemes for the Poor) :**

It would take a very long time for economic growth to generate enough employment opportunities to provide productive employment to all the unemployed and poor in the country. The special employment scheme of rural public works constitutes a direct attack on poverty as it does not depend on the economic growth on the poor. There are many such special anti-poverty schemes launched by the Government from time to time.

The approach of these schemes are to employ the poor on building durable and productive community assets such as roads, small irrigation facilities, school buildings, rural electrification. These durable productive assets after completion would create employment opportunities on sustained basis. If implemented in a right spirit, these schemes can make useful contribution to poverty reduction in the rural areas.

2.5 | UNEMPLOYMENT

There have been structural changes in India's employment scenario in the decade between 2004-05 to 2011-12 in the sense that for the first time, the share of primary sector in total employment has dipped below the halfway mark from 58.5% in 2004-05 to 48.9% in 2011-12. Employment in the secondary and tertiary sectors increased to 24.3% and 26.8% respectively in 2011-12 from 18.1% and 23.4% respectively in 2004-05.

Self employment continues to dominate with a 52.2% share in total employment. What is significant is the significant share of workers engaged in low-income generating activities. The extent of unemployment in India is generally measured on the basis of three different concepts used by the National Sample Survey Organisation as follows:



GLOBALISATION OF ECONOMY

THEORY

3.1 | GLOBALISATION OF ECONOMY

Economic Globalisation refers to the increasing interdependence of world economics as a result of growing scale of cross-border trade of commodities and services, flow of international capital and wide and rapid spread of technologies.

The rapid growing significance of information in all types of productive activities and marketization are the two major driving forces for economic globalization. In other words the fast globalization of the world's economics in recent years is largely based on the rapid development of science & technology. The advancement of Science & Technologies has greatly reduced the cost of transportation & communication, making economic globalization possible.

Today's ocean shipping cost is a half of that in the year 1930, the current airfreight 1/6 and telecommunication cost 1%. The price level of computers in 1990 was only about 1/125 of that in 1960, and this price level in 1998 reduced again by about 80%. This kind of "Time and space compression effect" of technological advancement greatly reduced the cost of international trade & investment, thus making it possible to organize & co-ordinate global production.

Globalisation intends to integrate the Indian economy with the world economy. Globalisation is considered to be an important element in the reforms package. It has four parameters:

- (i) Reduction of trade anomalies so as to permit free flow of goods and services across national frontier.
- (ii) To create an environment in which free flow of capital can take place.
- (iii) Creation of an environment permitting free flow of technology among nation-states.
- (iv) Creation of an environment in which free movement of labour can take place in different countries.

The definition of globalisation to only three components, viz. unhindered trade flows, capital flows and technology flows. They insist that the developing countries accept their definition of globalisation and conduct the debate on globalisation within the boundaries set by them.

- **Reduction of Import Duties :**

There has been a considerable reduction in import duties during the last years. The maximum rate was reduced from 5 years. The maximum rate was reduced from 150% in 1991-92 to 110% in 1992, to 85% in 1993-94, and 50% in 1995-96, custom duties on imports of capital goods were reduced to 80% in July 1991, to 55% in 1992 and to 25% in 1995. Tariffs on imports of raw materials and manufactured intermediates have also been reduced. Besides this, the government has attempted to rapidly dismantle quantitative restriction on imports and exports. It has also undertaken adjustment of exchange rate so as to remove over-valuation of currency. This has helped in stepping up exports.

- **Encourage of foreign investment :**

The government has taken a number of measures to encourage foreign investment. The main measures taken in this regard are:

- (i) Approval would be given for direct investment up to 51 per cent foreign equity in high priority industries as per Industrial Policy of 1991. There shall be no bottlenecks of any kind in the process. Such clearances will be given if foreign equity covers the foreign exchange requirements for imported capital goods.

On the 31st of December 1996 the Cabinet gave its assent to a new list of industries whereby joint ventures with up to 74 per cent foreign equity would be cleared automatically. Among the industries listed for the purpose are : Mining services such as oil and gas field services, basic metals solar energy like solar cells, cookers, air and water heating systems, small hydro-equipment, runways, electric generation and transmission and other infrastructure. The basic purpose of this move is to facilitate direct foreign investment in India.

- (ii) To provide access to international markets, majority foreign equity holding up to 51% equity would be allowed for trading companies primarily engaged in export activities.

- **Encouragement to foreign Technology Agreement :**

The Industrial Policy of 1991 undertook the following measures:

- (i) Automatic permission will be given for foreign technology agreements in high priority industries upto a lump sum payment of Rs. 1 crore, 5% royalty for domestic sales and 8% for exports, subject to total payments of 8% sales over a 10 year period from the date of the agreement or 7 years from commencement of production.
- (ii) In respect of other industries, automatic permission would be given if no free foreign exchange is required for any payments.
- (iii) No permission will be necessary for hiring of foreign technicians and foreign testing of indigenously developed technologies.

3.1.1 | WORLD TRADE ORGANIZATION (W.T.O.)

The WTO (World Trade Organization) began life on 1 January, 1995, but its trading system is half a century older. Since 1948, the general Agreement on Tariffs and trade (GATT) had provided the rules for the system.

The last and largest GATT round (87 months duration), was the Uruguay round which lasted from 1986 to 1994 and led to the WTO's creation. Whereas GATT had mainly dealt with trade in goods, the WTO and its agreements now cover trade in services and in traded inventions, creations and designs (Intellectual property)

- Doha round (Nov. 2001) has not yet concluded.
- Its headquarters are in Geneva.
- The WTO is the legal and institution basis of the multi-lateral trading system which aims at liberalization of world trade.
- It has a General Council, Ministerial conference and director General as its Organs.
- Two year ministerial meeting is the ultimate decision making body of the WTO.
- At present, WTO has 164 members and 23 observer governments.
- Liberia became the 163rd member and Afganistan become the 164th Member. (on 29th July 2016)

3.1.3 | GAINS FROM WTO TO INDIA

- India got boom in exports because WTO gradually lowered Barriers internationally. Our export was only \$33.22 billion in 1998-99.
- Right now India's exports are worth more than \$100 billion.
- India won multilateral dispute settlement against such powerful economies as USA.
- Because of TRIPS, India had to adopt international standards in Intellectual property rights.
- Flow of Foreign investment & technology.
- Textiles boom (because MFA = Multilateral Fiber Agreement was scrapped under WTO's ATC = Agreement on Textile clothing.) Otherwise previously UK and other nation had put quantitative limits on Indian Cotton's Entry in their market.

3.1.4 | TRADE RELATED INTELLECTUAL PROPERTY RIGHTS (TRIPS)

The agreement on trade related Aspects of Intellectual property Right of the WTO is commonly known as the TRIPS agreement or simply TRIPS.

TRIPS is one of the main agreements comprising the WTO agreement. This agreement was negotiated as part of the eighth round of multilateral trade negotiation in the period 1986-94 under general agreement on Tariffs and Trade (GATT) commonly referred to as Uruguay Round extending from 1986 to 1994. It appears as Annex 1C of the Marrakesh Agreement which is the name for the main WTO agreement. The Uruguay Round introduced intellectual property rights into the multilateral trading system for the first time through a set of comprehensive disciplines.

The TRIPS agreement is part of the "Single undertaking" resulting from the Uruguay Round Negotiations. This implies that the TRIPS agreement applies to all WTO members, mandatorily. It also means that the provisions of the agreement are subjected to WTO dispute settlement mechanism which is contained in the dispute settlement understanding (The "Understanding on Rules and Procedures Governing the settlement of disputes") The TRIPS agreement is one of the most important agreements of W.T.O.

Example: What are Intellectual property rights (IPRS) and how do they grant protection to the owner of an IPR?

Solution: Intellectual property rights or IPR are rights given to people over the creations of their minds. These rights are given by society through the state as an incentive to produce and disseminate ideas and expressions that will benefit society as a whole. Unlike Fundamental rights of citizens which are guaranteed by the constitution of a country, IPR are statutory rights enacted by the law making authority in a country.

Conventionally, many Forms of IPRs are recognised. They are traditionally classified into two main categories.

(i) Copyright and Related Rights :

Copyright and Related Rights i.e., right granted to authors of literary and artistic works, and the rights of performers, producers of phonograms and broadcasting organizations.

The main purpose of protection of copyrights and related rights is to encourage and reward creative work. The distinguishing feature of this category of rights is that they protect only the tangible expression of an idea itself.

(ii) Industrial Property :

This category includes

- The protection of distinctive signs such as trademarks and geographical indications.
- Industrial property protected primarily to stimulate innovation, design and creation of technology which are protected through laws on protection of inventions (Patents), industrial designs & trade secrets.

(a) Setting up The System :

There is no single method for establishing a QA system. Each organisation has its own problems that will require special consideration and planning. However, once the decision to implement a QA system has been taken and the necessary funds and facilities have been made available, then a plan must be drawn up. For a new project the QA system can be drawn up before the start but if the project is already established then a QA system can be retrofitted. In the latter situation, existing practices must be evaluated with respect to QA needs and any QA checks and procedures that are already in place. It is better to build on procedures already in place and only to remove them if they are clearly unsatisfactory.

If too many changes are imposed too quickly, especially where they are seen to increase work load, they are unlikely to be met with a favourable response and implementation will be poor. The QA programme must be seen to be practical and realistic and not to include trivial or unnecessarily time-consuming or difficult tasks (WHO/UNEP/VKI, 1997).

(ii) The Quality Manual :

The Quality Manual is composed of the management documents needed to implement the QA programme and includes (ISO, 1990):

- A quality policy statement, including objectives and commitments.
- The organisation and management structure of the project, its place in any parent organisation and relevant organisational charts.
- The relationship between management, technical operations, support services and the quality system.
- Procedures for control and maintenance of documentation.
- Job descriptions for key staff and reference to the job descriptions of other staff.
- Identification of approved signatories.
- Procedures for ensuring traceability of all paperwork, data and reports.
- The laboratory's scope for calibrations and tests.
- Arrangements for ensuring that all new projects are reviewed to ensure that there are adequate resources to manage them properly.
- Reference to the calibration, verification and testing procedures used.
- Procedures for handling calibration and test items.
- Reference to the major equipment and reference measurement standards used.
- Reference to procedures for calibration, verification and maintenance of equipment.
- Reference to verification practices including inter-laboratory comparisons, proficiency testing programmes, use of reference materials and internal quality control schemes.
- Procedures to be followed for feedback and corrective actions whenever testing discrepancies or departure from documented procedures are detected.
- Complaints procedure.
- Procedures for protecting confidentiality and property rights.
- Procedures for audit and review.

(iii) Training :

The development of the programme must include all staff. Typically, the management commit resources, establish policy and standards, approve plans, assign responsibilities and maintain accountability. The supervisory staff take responsibility for the development and implementation of the programme and operating personnel provide technical expertise and advice. At all stages, the operating personnel must be consulted about the practicalities of any proposed changes. In turn, they must notify management of any problems or changes that may affect the programme.

(iv) Standard Operating Procedures :

Standard Operating Procedures (SOPs) are the documents detailing all specific operations and methods, including sampling, transportation, analysis, use of and calibration of equipment, production of reports and interpretation of data.

They are the internal reference manual for the particular procedure and should detail every relevant step. Anybody of the appropriate training level should be able to follow the SOP. They should, where necessary, cross-reference other SOPs and refer to them by number. Method SOPs may originate from organisations such as the International Organization for Standardization (ISO), British Standards Institute (BSI), American Standard Technical Method (ASTM) or from the instructions that come with the test kit where a commercially produced method is used. Such SOPs have the advantage of not requiring verification and save time in writing “in-house” SOPs. However, if they are used they must be used without modification. If any modification at all takes place, the alterations must be documented. Sometimes “in house” methods are preferred, and it is vital that such methods are properly verified. This may be done by reference to scientific literature and by “in house” validation.

The procedure should be written in short, clear sentences. Equipment SOPs should include methods and frequency of maintenance, cleaning, calibration and servicing. Method SOPs should include all the information necessary to carry out the procedure without reference to other documents with the exception of fully documented SOPs.

Any statements regarding ranges for measurement variables such as temperature, weights, etc. should be within the scope of the facility, i.e. not so wide that they affect the result but not so narrow that they are not practically achievable or necessary. Calculations should include any equations and demonstration of statistical control. Where applicable, criteria for the acceptance of data should be stated and acceptable ranges quoted. Disposal methods for reagents, test materials and other consumables should also be stated.

Some SOPs, such as those for office procedures, will be customised. The person most technically competent to carry out the procedure described should write the SOP. An SOP should have a descriptive title and also have a unique reference and version number. The purpose of the SOP should be stated alongside the variables measured, the expected range of values, the limitations of the method and the expected precision and accuracy. Any documents regarding the source of the method should be stated. Safety notes should include any foreseeable risks involved in the procedure, alongside procedures to minimise risk and procedures in case of an accident. Any special training required for the operator, and special apparatus required for the procedure (including all reagents and materials required) should be stated along with such information as the grade, reference number, size and company of origin. The storage, handling, recording and subsequent disposal of the sample should also be covered in the SOP, including storage temperatures, sample splitting, traceability, and any other issues. The style and format of the final data report should be given where applicable and reporting procedures and archiving requirements should also be included.

(v) The Quality Assurance Manager :

For larger projects, proper management of QA will require the appointment of a QA manager to liaise with staff, to manage data archives, to conduct regular audits and reviews and to report on any QA issues. The manager is responsible for inspecting all aspects of the system regularly to ensure compliance, for reporting on such inspections and audits to management and for recommending improvements. These activities involve inspecting facilities and procedures regularly, tracing samples and documents back through the system and ensuring that all appropriate records have been kept.

Where QA is the responsibility of a separate section within an organisation many of the management difficulties are minimised. Appointment of a full time QA manager is difficult in a small organisation and in these cases the responsibility for QA should be assigned on a part-time basis, to a suitable member of staff.

(vi) Auditing and Checking Compliance :

When all the documentation for the QA system is in place, it should be piloted. During this time, the QA manager should conduct a series of audits covering all aspects of the system. Traceability of data is a key component which can be checked by picking data at random and tracing them back through all relevant paperwork to the sampling procedure. A review of the system with positive and negative areas clearly defined should be written at the end of the pilot phase.

One method of implementation is to apply for accreditation from a recognised QA system. The ISO standard, ISO 9000, is suitable for the monitoring programme as a whole and is available in many countries. These systems are expensive but do allow the QA programme to be assessed independently against an agreed standard. Sometimes formal accreditation is required by regulatory and commercial bodies.

(vii) Maintaining Quality Assurance :

In order to maintain the QA system, it is necessary to check periodically each area of the system for compliance. This involves auditing the component parts to assess whether they continue to meet the original criteria. This procedure should be formerly documented. Reports on all audits should be made available to management and to the persons responsible for the work concerned. Deviations from required standards must be corrected as soon as possible. The audit must be independent, and should be thorough and unannounced.

3.2 | ISO CERTIFICATION**3.2.1 | STANDARD**

A standard is a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, process and services are fit for their purpose.

3.2.2 | ISO

It is a non-governmental, independent international organization developed for the purpose of publishing international standard (called ISO standards) to ensure quality, safety and efficiency of products, services and systems. In English language, it is an International Organization for Standardization (IOS) but the term “ISO” was derived from a Greek word called 'isos', meaning equal.

Initially, delegates from 25 countries met in Institute of Civil Engineers in London 'to facilitate the international coordination and unification of industrial standards'. Officially, on 23 February 1947, they declared the society as “ISO”. Now, 161 countries are members in the ISO. The 161 countries and 3368 technical bodies take care of the developments of the standards. There are three types of members in ISO, full members (or member bodies), correspondent members and subscriber members. The first two members can sell and adopt international standards and participate in meetings regarding ISO, but, third type can only be up to date with the standards, they cannot sell and adopt standards. No individual or company or organization can be a member, only a country can be one types of the, members. Since 1947, till now the ISO has published 21000 international standards and each standard has its own number for example ISO 9000-Quality management, ISO 14000- Environmental management, ISO 45001-Occupational Health and Safety etc.

(i) ISO-9000 : Quality Management

It provides guidance and tools to companies and organizations which help their products and services consistently meet customer requirements and consistently improvement in quality.

The ISO 9000 is a family of four standards as given below.

- **ISO 9000 : 2015**

It covers fundamental concepts and vocabulary required for quality management.

- **ISO 9001 : 2015**

It sets out the requirements of quality managements.

- **ISO 9004 : 2009**

It focuses on how to make a quality management system more effective and efficiently (in other words, managing for the sustained success of an organization-A quality management approach)

- **ISO 19011 : 2011**

It gives guidelines for auditing quality management systems.

(ii) ISO-9000 : 2015

This International Standard gives the fundamental vocabulary, concepts and principles of quality management systems (QMS) and it is the foundation for other QMS standards. It is developed by ISO/TC 176 (TC refers to technical committee that developed the standard). It helps the user effectively and efficiently in implementing a QMS. It assists organizations to realize their objectives. It applicable to all organizations without considering their size and complexity involved. It increases the awareness of duties, commitment in achieving goals customer satisfaction.

It contains fundamental concepts, the seven quality management principles

- Customer focus
- Leadership
- Engagement of people
- Process Approach
- Improvement
- Evidence based decision making
- Relationship management

Explaining each and every principle with their "statement", "rationale"-describing the reason to use the principle, "key benefits" and "possible actions" that the organization takes in applying the principles in the standard, the vocabulary, definitions and terms related to people , organization, activity, process requirement, data, information, documentation, determination, action and audit, and also concept relationship and their graphical representation are arranged conceptual wise.

Note: Top management' is defined "a person or group of people who directs and controls an organization at the highest level".

(iii) ISO-9001 : 2015 (is an improve version of ISO-9001:2008)

This International Standard specifies *requirements for a quality management system*. These requirements are complementary to the requirements for products and services. This standard works based on the 4th principle of quality management, process approach, which enables an organization to plan its processes and control the interrelationships and interdependencides among the processes of the system, so that the overall performance of the organization can be enhanced. It is done by systematic definition of processes and their interactions.

(iv) ISO-9004 : 2009

In a complex, demanding and ever-changing environment, the ISO 9004:2009 by a quality management approach act as guidance to support the achievement of sustained success of any organization.

Sustained success of an organization depends on the ability of the organization in meeting the needs and expectations of customers and interested parties, over a long time and in a balanced manner. It is possible by effective management of the organization through knowledge of the organizations environment.

It act as self- assist tool for the review of maturity level of organization, including its leadership, strategy, management system, resources and processes, to identify areas strengths, weaknesses and opportunities for improvements or innovation or both.

This standard is nothing but an extend mode of ISO 9001 addressing expectations and needs of all parties and providing systematic guidance for continual improvement of the organization. It is show graphically in the following figure.

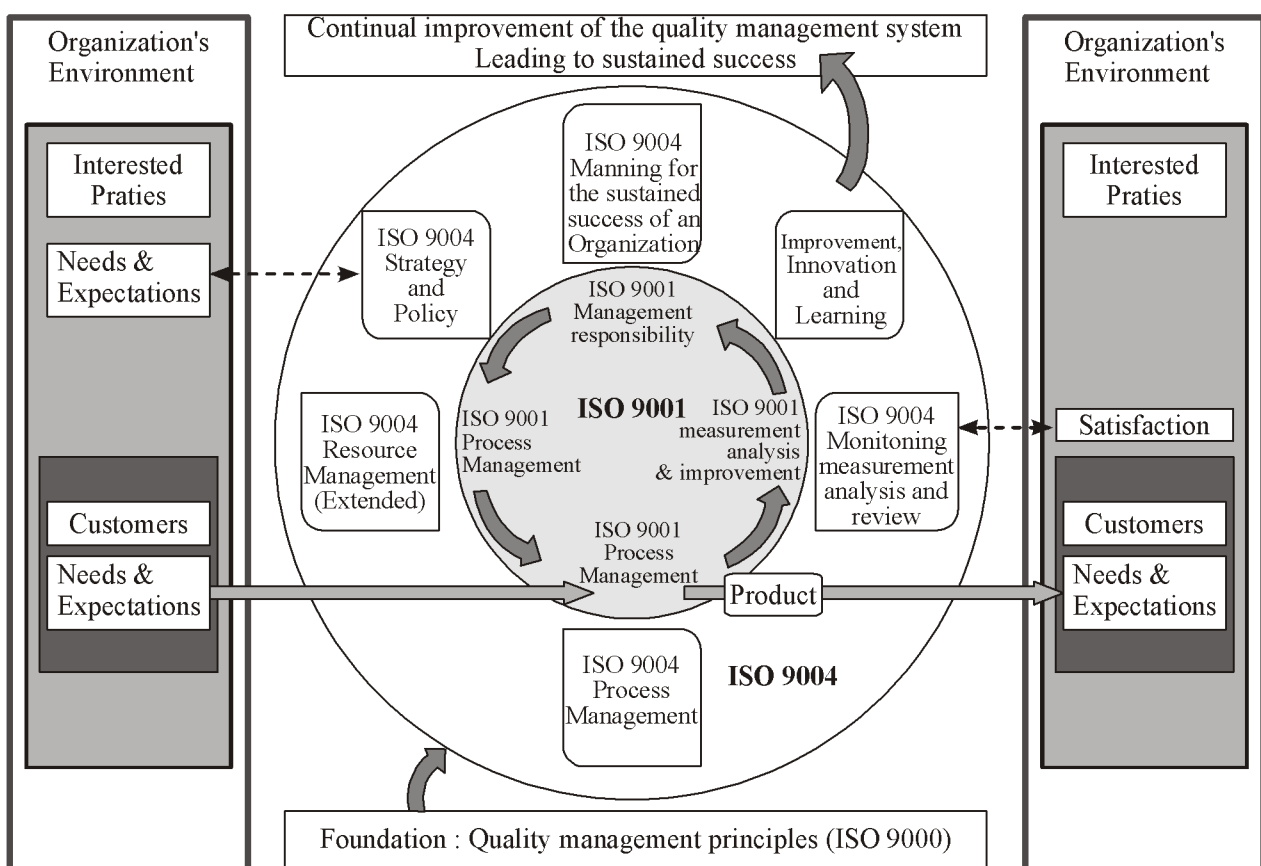


Figure-2 *Extended model of a process-based quality management system*

(e) ISO-19011 : 2011

ISO 19011 : 2011 gives guidance on auditing management systems, including the principles of auditing, developing management system audits, balancing an audit, as well as guidance on the evaluation of competence of individuals involved in the audit process, including the person managing the audit programme, auditors and audit groups.

Organizations that need to conduct external and internal audits of management systems has to use ISO 19011 : 2011 for better conformity. Sometime special considerations are given to other types of audits for the application of ISO ISO 19011: 2011.

3.4.8 | EMPLOYEE INVOLVEMENT AND EMPOWERMENT

The criterion 4 in the system points out how to utilize human resources. Motivation of the work force is the heart of improvement in performance which also include educating different skills and supplying new equipments and tools.

3.4.9 | DECISIONS BASED ON FACTS, DATA, AND ANALYSIS

The second element of the system focuses on selection of data points, measurement methods and analysis for better decisions to improve quality. The fact is, "if you don't measure it you can't improve it".

3.4.10 | PROVIDE SUPERIOR QUALITY

The quality of product begins with its design stage and it is stage at which the error cost is much lower than that in downstream of manufacturing method.

3.4.11 | SHORTENING RESPONSE TIME

How quickly the product comes into the market in response with the demands impact the market share. Now, it is being achieved by cycle time reduction and error prevention.

3.4.12 | QUANTITATIVE PERFORMANCE INDICATORS

Statistical tools like statistical quality control (SQC), quality charts etc., are called the quantitative performance indicators and these needs to be condensed rather than giving detailed information to the topmost management people.

3.4.13 | FUTURE CYCLES OF IMPROVEMENT

The continuous improvement in quality requires use of the quality cycles and improvements in the cycles and it requires long range out-look and commitment to stakeholders.

3.5 | 5'S THEORY**3.5.1 | WHAT IS 5S**

5s is a philosophy and a way of organizing and managing the workspace and workflow with the intent to improve efficiency by eliminating waste, improving flow and reducing process unreasonableness.

"It is for improvement of working environment."

5S activities are to create good working environment through reduction of "Muri", "Mura" and "Muda".

- **Muri** : Overburden, Unreasonableness or absurdity.
- **Mura** : Unevenness or inconsistency, primarily with physical matter and the human spiritual condition.
- **Muda** : Activity which is wasteful or doesn't add value.

Note: • 5 'S' developed by the Japanese.

- Housekeeping system.
- Helps create a better working environment and a consistency high quality process.

Example: Define 5 'S' theory in Detail.

[RPSC-AE(Mains)-2013]

Solution: 5 's' in japanese/English

5s is literally Five abbreviations of Japanese terms with 5 initials of S.

	Japanese	English
S-1	Seiri	Sort
S-2	Seiton	Set
S-3	Seiso	Shine
S-4	Seiketsu	Standardize
S-5	Sitsuke	Sustain

■ Background of 5S Activities

The word 5 's' was generalized in 1980's in manufacturing sector in Japan, as Toyota production system (TPS) became famous in the sector and "5S" activities were set as one of the bases of TPS. Service industry started to used "5S" in 1990's.

■ What 5S Can Do?

- Team work improvement through every one's participation.
- Identify abnormalities.
- Identify wastes and reduce the wastes.

Wastes:

- (i) Overproduction
- (ii) Inventory
- (iii) Waiting
- (iv) Motion
- (v) Transportation
- (vi) Rework
- (vii) Overprocessing

- Improve productivities.
- Improve safety.

If No 5S Activities

- Looking for Necessary items.
- Making Mistake.
- Remember what/how to do
- Hesitate what to do.

■ Details of "5S" Approach

5S : Sort – Set – Shine – Standardize – Sustain

