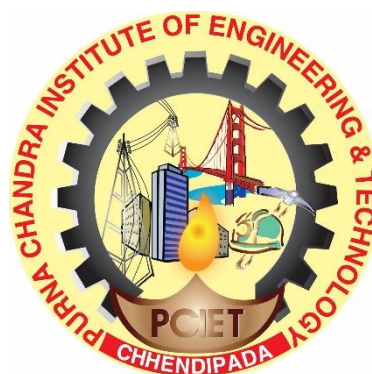# LEARNING MATERIALS

SEMESTER : 5TH SEMESTER

BRANCH : MECHANICAL ENGINEERING

SUBJECT :ENTREPRENEUSHIP AND MANAGEMENT & SMART TECHNOLOGY

(TH-1)

FACULTIES : (1)   ANUPAMA BEHERA (LECT. IN MGMT)

PURNA CHANDRA INSTITUTE OF ENGINEERING & TECHNOLOGY

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UNIT-1

Qualities of an entrepreneur

1. Disciplined

These individuals are focused on making their businesses work, and eliminate any hindrances or distractions to their goals. Successful entrepreneurs are disciplined enough to take steps every day toward the achievement of their objectives.

2. Confident

They are confident with the knowledge that they will make their businesses succeed. They exude that confidence in everything they do.

3. Open Minded

Entrepreneurs realize that every event and situation is a business opportunity. Ideas are constantly being generated about workflows and efficiency, people skills and potential new businesses.

4. Self Starter

Entrepreneurs know that if something needs to be done, they should start it themselves. They set the parameters and make sure that projects follow that path. They are proactive, not waiting for someone to give them permission.

5. Competitive

Many companies are formed because an entrepreneur knows that they can do a job better than another. They need to win at the sports they play and need to win at the businesses that they create. An entrepreneur will highlight their own company's track record of success.

Define Entrepreneur

An entrepreneur is an individual who creates a new business, bearing most of the risks and enjoying most of the rewards. The entrepreneur is commonly seen as an innovator, a source of new ideas, goods, services, and business/or procedures.

What Is a Startup?

A startup is a young company founded by one or more entrepreneurs to develop a unique product or service and bring it to market. By its nature, the typical startup tends to be a shoestring operation, with initial funding from the founders or their friends and families.

KEY TAKEAWAYS

A startup is an entrepreneurial venture in search of enough financial backing to get off the ground.

The first challenge for a startup is to prove the validity of the concept to potential lenders and investors.

Startups are always risky propositions but potential investors have several approaches to determining their value.

What are SOLE-PROPRIETORSHIP/PARTNERSHIP business ? Explain it's merits & demerits.

Ans :SOLE PROPRIETORSHIP: A sole proprietorship is a business owned by one person for-profit. The owner may operate the business alone or may employ others. The owner of the business has **unlimited liability** for the debts incurred by the business. Glos and Baker write that "A sole proprietorship is a business owned by one person who is entitled to all of its profits," Reed and Conover say "The single or the sole proprietorship is a business owned and controlled by one man even though he may have many other persons working for him.

Advantages

- Easy to form& easy to divest
- Least government rules and regulations affecting it
- No profit sharing with others
- Owners have complete control over all the aspects of his or her business and can take any managerial decisions that he/ she wants to take
- Privacy of the business is maintained

Disadvantages

- Raising capital for a proprietorship is more difficult
- Lesser documentation
- Unlimited liability
- The enterprise may be crippled or terminated if the owner becomes ill

PARTNERSHIP: A partnership is a business owned by two or more people. In most forms of partnerships, each partner has unlimited liability for the debts incurred by the business. The three typical classifications of for-profit partnerships are general partnerships, limited partnerships, and limited liability partnerships.

Advantages

- **Capital –** Due to the nature of the business, the partners will fund the business with start-up capital. This means that the more partners there are, the more money they can put into the business, which will allow better flexibility and more potential for growth.
- **Flexibility –** A partnership is generally easier to form, manage and run.
- **Shared Responsibility –** Partners can share the responsibility of the running of the business. This will allow them to make the most of their abilities. Rather than splitting the management and taking an equal share of each business task, they might well split the work according to their skills. So if one partner is good with figures.
- **Decision Making –** Partners share the decision making and can help each other out when they need to. More partners mean more brains that can be picked for business ideas and for the solving of problems that the business encounters.

Disadvantages

- **Disagreements –** One of the most obvious disadvantages of partnership is the danger of disagreements between the partners. Obviously people are likely to have different ideas on how the business should be run, who should be doing what and what the best interests of the business are. This can lead to disagreements and disputes.
- **Agreement –** Because the partnership is jointly run, it is necessary that all the partners agree with things that are being done. This means that in some circumstances there are less freedoms with regards to the management of the business.
- **Liability –** Ordinary Partnerships are subject to unlimited liability, which means that each of the partners shares the liability and financial risks of the business.
- **Profit Sharing –** Partners share the profits equally. This can lead to inconsistency where one or more partners aren't putting a fair share of effort into the running or management of the business, but still reaping the rewards.

Role of SIDBI :

SIDBI is mandated to serve as the Principal Financial Institution for executing the triple agenda of promotion, financing and development of the MSME sector and coordination of the functions of the various Institutions engaged in similar activities.

Functions of KVIC:

- Building up of a reserve of raw materials and implementation for supply to producers.
- Formation of common service facilities for **processing** of raw materials that include semi-finished goods.
  Promoting the sale and marketing of Khadi and Village Industries products, as well as handicrafts.

Functions of NSIC:

* The main NSIC functions are to promote the budding small businesses of India and provide help to Small Scale Industries (SSI).

* The National Small Industries Corporation objectives include: To enhance the corporation reach which will ultimately result in business **growth**.

UNIT-2

What Is a Business Plan?

A business plan is a written document that describes in detail how a business — usually a [startup](#) — defines its objectives and how it is to go about achieving its goals. A business plan lays out a written roadmap for the firm from each of a [marketing](#), financial, and operational standpoint.

What is the [time schedule](#) ?

The time schedule is a contractual document between the client and the contractor which defines the forecast sequence and progress of the work and the contractual start, finish and milestones dates. The time schedule could contain the budget cost of the project which creates the project cash flow and could contain the manpower as well which creates manpower histograms.

The Importance of Scheduling
Scheduling is the art of planning your activities so that you can achieve your goals and priorities in the time you have available. When it's done effectively, it helps you:

- Understand what you can realistically achieve with your time.

- Make sure you have enough time for essential tasks.

- Add contingency time for "the unexpected."

- Avoid taking on more than you can handle.

- Work steadily toward your personal and career goals.

- Have enough time for family and friends, exercise and hobbies.

- Achieve a good work-life balance.

Four ways to identify more business opportunities

To be successful entrepreneurs, we need to be continually innovating and looking for opportunities to grow our startups.

But how do you find new opportunities to take your startup to new markets and growth levels? Here are four ways to identify more business opportunities.

1. Listen to your potential clients and past leads

When you're targeting potential customers listen to their needs, wants, challenges and frustrations with your industry. Have they used similar products and services before? What did they like and dislike? Why did they come to you? What are their objections to your products or services?

This will help you to find opportunities to develop more tailored products and services, hone your target market and identify and overcome common objections.

2. Listen to your customers

When you're talking to your customers listen to what they saying about your industry, products and services. What are their frequently asked questions? Experiences? Frustrations? Feedback and complaints?

This valuable customer information will help you identify key business opportunities to expand and develop your current products and services.

3. Look at your competitors

Do a little competitive analysis (don't let it lead to competitive paralysis though) to see what other startups are doing, and more importantly, not doing? Where are they falling down? What are they doing right? What makes customers go to them over you?

Analysing your competitors will help you identify key business opportunities to expand your market reach and develop your products and services.

4. Look at industry trends and insights

Subscribe to industry publications, join relevant associations, set Google alerts for key industry terms and news and follow other industry experts on social media.

Absorb yourself in your industry and continually educate yourself on the latest techniques and trends.

Supply and Demand Analysis

An understanding of markets (supply and demand) is critical to maximise potential and minimise risk for our clients. M.E has developed a wide range of tools to identify market demand for goods, services and facilities and we specialise in modelling markets in a holistic manner, incorporating demand and supply dynamics and identifying the externalities (positive and negative effects) of growth and development.

- **Demographic Analysis**

  M.E helps private and public sector clients understand the fundamental structures of the population. These structures are important because they influence many current and future trends in growth, consumption of goods and services and the demands placed on local and national infrastructure.

- **Segment Analysis**

Behaviour in any market (from retail goods to recreational and tourism opportunities) is governed by demographic factors such as age, sex, life stage and household type. At M.E we specialise in conducting market (supply and demand) analysis at a detailed sectoral level to help explain underlying patterns and trends.

• Spatial Analysis

Location is a key driver of market behaviour. M.E are industry leaders in integrating social, demographic and economic data with spatial information to assess demand and the structures established to meet this demand. Spatial-interactive models and GIS are applied to make the link between demand (people, households, businesses) and supply (facilities, infrastructure) on the ground. We have applied these methods widely for the commercial sector (e.g. in retail and service network planning and development) and the public sector (e.g. to locate recreational and sporting facilities such as libraries and swimming pools).

• Specialist Market Sector Analysis

M.E has undertaken a range of studies examining the supply and demand arising in specific markets or industry sectors. We identify total supply and demand in any market and assess how specific businesses fit within the total market at a local, regional or national level. Further, our forecasting abilities (growth projections and econometrics) allow us to consider likely future outcomes under a range of scenarios.

PRODUCT SELECTION

Product selection is a decision process, in which the design team selects one or few **product** concept for further development. • An entrepreneur establishes a business unit with a modest investments in a small scale level.

Criteria for Product Selection

Selecting/choosing the appropriate product or service can be considered the important building block of every business venture. As a matter of fact, products serve the business as the most important and visible first contacts with buyers i.e. end users. The physical nature of products to the consumers typifies the psychological symbols of personal attributes, goal and strategic pathways. In other words, consumers are most likely to form opinion and perspectives for the entrepreneur.

UNIT-3

PRELIMINARY PROJECT REPORT

Preliminary Project Report is a formal document that describes specific activities, events, occurrences, or subjects of a project to explain progress of the project up to a certain point in time (but not later than completion time). This document is presented and communicated at project status meetings to explain what goals, deliverables and results are produced and what activities are still in progress. The document serves as the basis for developing the final project report.

A typical preliminary report for projects highlights the following data:

- *Problem/need*: A clear description of the problem or need the project aims to handle.
- *Proposed solution*: a brief description of how to address the problem/need.
- *Work effort*: An analysis summary of work relevant to the project.
- *Status*: current state of project work, including activities completed and unfinished.
- *Evaluation*: an analysis and assessment of project work by specific criteria such as cost-effectiveness, feasibility, manageability, performance, others.
- *Schedule*: a timeline with specific milestones and events related to project work.

What Is Project Viability?

Every small-business project has stated outcomes that need to be met in order for it to be "viable," or prudent and profitable. For example, if you decide to launch a new marketing campaign, the project's viability -- or it's positive outcomes -- will be judged on whether the new business the campaign attracts will be worth the time and costs associated with designing and launching the campaign initially. Determining the viability of a project requires an evaluation of a number of different factors, and viability potential will differ from one small business to the next.

TECHNO ECONOMIC FEASIBILITY STUDIES

Introduction:

Objective of Techno-Economic Feasibility Studies/ Detailed Project Reports is to determine the technical feasibility and financial viability of the project, assess the risks associated with the project and enumerate imminent actions that are required to be taken. It helps a client get a detailed evaluation of a project.

Coverage:

Techno-Economic Feasibility Studies/ Detailed Project Reports cover the following based on the clients requirement:

- **Markets: It covers estimated future sales revenue of the project based on estimated sales volumes and price.**
- **Raw Materials & Fuel: It estimates the adequacy of the quality and quantity of the raw materials and fuel for the project, make an estimate of its cost.**
- **Plant Siting, Location & Infrastructure: It assesses the existing infrastructure and actions required to develop the infrastructure necessary to set up the project.**
- **Project Technical Concept: This is core deliverable of the project and covers plant capacity, equipment sizing, storages, plant auxiliaries, system engineering, electrical engineering, civil engineering, Control & Automation engineering, Quality Control & Assurance, Captive Power Plant and Waste Heat recovery system (WHR) based on the project requirement.**
- **Logistics: Inbound and outbound logistics and logistics planning.**
- **Environment: Applicable Regulatory Framework and Environmental Impact of Project.**
- **Implementation Planning.**
- **Human Resources: Requirement and cost.**

- **Investment Cost: Fund requirement.**
- **Operating Cost: It covers cost of raw material, utilities, overheads, etc.**
- **Financial Appraisal: It covers project profitability, IRR, NPV, payback, etc.**
- **Risks & Mitigation.**

UNIT-4

Management :

Management in businesses and organizations is the function that coordinates the efforts of people to accomplish goals and objectives by using available resources efficiently and effectively.

Functions of Management
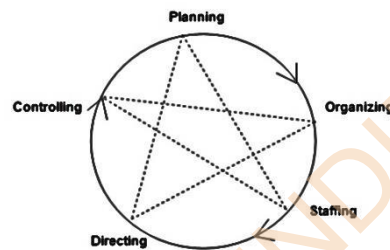
1. **Planning**

   According to KOONTZ, "Planning is deciding in advance - what to do, when to do & how to do. It bridges the gap from where we are & where we want to be". Planning is a systematic thinking about ways & means for accomplishment of pre-determined goals. It is all pervasive, it is an intellectual activity and it also helps in avoiding confusion, uncertainties, risks, wastages etc.

2. **Organizing**

   It is the process of bringing together physical, financial and human resources and developing productive relationship amongst them for achievement of organizational goals. According to Henry Fayol, "To organize a business is to provide it with everything useful or its functioning i.e. raw material, tools, capital and personneletc.

   - Identification of activities
   - Classification of grouping of activities
   - Assignment of duties
   - Delegation of authority and creation of responsibility
   - Coordinating authority and responsibility relationships

3. **Staffing**

   It is the function of manning the organization structure and keeping it manned. Staffing has assumed greater importance in the recent years due to advancement of technology,

increase in size of business, complexity of human behavior etc. The main purpose of staffing is to put right man on right job i.e. square pegs in square holes and round pegs in round holes. Staffing involves:

- Manpower Planning (estimating man power in terms of searching, choose the person and giving the right place).
- Recruitment, selection & placement.
- Training & development.
- Remuneration.
- Performance appraisal.
- Promotions & transfer.

4. **Directing**

It is that part of managerial function which actuates the organizational methods to work efficiently for achievement of organizational purposes. Direction is that inert-personnel aspect of management which deals directly with influencing, guiding, supervising, motivating sub-ordinate for the achievement of organizational goals. Direction has following elements:

- Supervision
- Motivation
- Leadership
- Communication

5. **Controlling**

It implies measurement of accomplishment against the standards and correction of deviation if any to ensure achievement of organizational goals. The purpose of controlling is to ensure that everything occurs in conformities with the standards. An efficient system of control helps to predict deviations before they actually occur. Therefore controlling has following steps:

a. Establishment of standard performance.
b. Measurement of actual performance.
c. Comparison of actual performance with the standards and finding out deviation if any.

Levels of Management

The term "Levels of Management' refers to a line of demarcation between various managerial positions in an organization. The number of levels in management increases when the size of the business and work force increases and vice versa. The level of management determines a chain of command, the amount of authority & status enjoyed by any managerial position. The levels of management can be classified in three broad categories:

1. **Top level / Administrative level**

2. **Middle level / Executory**
3. **Low level / Supervisory / Operative / First-line managers**

Managers at all these levels perform different functions. The role of managers at all the three levels is discussed below:

1. Top Level of Management

It consists of board of directors, chief executive or managing director. The top management is the ultimate source of authority and it manages goals and policies for an enterprise. It devotes more time on planning and coordinating functions.

2. Middle Level of Management

The branch managers and departmental managers constitute middle level. They are responsible to the top management for the functioning of their department. They devote more time to organizational and directional functions. In small organization, there is only one layer of middle level of management but in big enterprises, there may be senior and junior middle level management. Their role can be emphasized as -

3. Lower Level of Management

Lower level is also known as supervisory / operative level of management. It consists of supervisors, foreman, section officers, superintendent etc. According to *R.C. Davis*, "Supervisory management refers to those executives whose work has to be largely with personal oversight and direction of operative employees".

UNIT-5

Financial Management:

Financial management refers to the efficient and effective**management** of money (funds) in such a manner as to accomplish the objectives of the organization. It is the specialized function directly associated with the top **management.**

Productivity :

The effectiveness of productive effort, especially in industry, as measured in terms of the rate of output per unit of input.

Definition of 'Balance Sheet'

Definition: Balance Sheet is the financial statement of a company which includes assets, liabilities, equity capital, total debt, etc. at a point in time. Balance sheet includes assets on one side, and liabilities on the other. For the balance sheet to reflect the true picture, both heads (liabilities & assets) should tally (Assets = Liabilities + Equity).

Marketing :

Marketing is a form of communication between you and your customers with the goal of selling your product or service to them. Communicating the value of your product or service is a key aspect of **marketing**.

Recruitment:

Recruitment refers to the overall process of attracting, selecting and appointing suitable candidates for jobs (either permanent or temporary) within an organization.

Selection:

Selection is the process of **selecting** a qualified person who can successfully do a job and deliver valuable contributions to the organization. A **selection** system should depend on job analysis. This ensures that the **selection** criteria are job related and will provide meaningful organizational value.

Petty Cash Book:

In a firm, there are usually cash transactions happening in all the departments. These we will record in one of the above formats of cash books. But there are many cash transactions happening for very small amounts. Sometimes there are dozens of such transactions that occur in just one day. These are known as petty transactions. Examples are expenses for postage, stationery, traveling, food bills, etc.

Discuss Techniques of inventory control.

1. Setting up of various stock levels:
To avoid over-stocking and under stocking of materials, the management has to decide about the maximum level, minimum level, re-order level, danger level and average level of materials to be kept in the store.
These terms are explained below:
(a) Re-ordering level:
It is also known as 'ordering level' or 'ordering point' or 'ordering limit'. It is a point at which order for supply of material should be made.
This level is fixed somewhere between the maximum level and the minimum level in such a way that the quantity of materials represented by the difference between the re-ordering level and the minimum level will be sufficient to meet the demands of production till such time as the materials are replenished. Reorder level depends mainly on the maximum rate of consumption and order lead time. When this level is reached, the store keeper will initiate the purchase requisition.
Reordering level is calculated with the following formula:
Re-order level =Maximum Rate of consumption x maximum lead time
(b) Maximum Level:
Maximum level is the level above which stock should never reach. It is also known as 'maximum limit' or 'maximum stock'. The function of maximum level is essential to avoid unnecessary blocking up of capital in inventories, losses on account of deterioration and obsolescence of materials, extra overheads and temptation to thefts etc. This level can be determined with the following formula. Maximum Stock level = Reordering level + Reordering quantity —(Minimum Consumption x Minimum re-ordering period)
(c) Minimum Level:
It represents the lowest quantity of a particular material below which stock should not be allowed to fall. This level must be maintained at every time so that production is not held up due to shortage of any material.
It is that level of inventories of which a fresh order must be placed to replenish the stock. This level is usually determined through the following formula:

Minimum Level = Re-ordering level — (Normal rate of consumption x Normal delivery period)

(d) Average Stock Level:
Average stock level is determined by averaging the minimum and maximum level of stock.
The formula for determination of the level is as follows:
Average level =1/2 (Minimum stock level + Maximum stock level)
This may also be expressed by minimum level + 1/2 of Re-ordering Quantity.

(e) Danger Level:
Danger level is that level below which the stock should under no circumstances be allowed to fall. Danger level is slightly below the minimum level and therefore the purchases manager should make special efforts to acquire required materials and stores.

This level can be calculated with the help of following formula:
Danger Level =Average rate of consumption x Emergency supply time.

(f) Economic Order Quantity (E.O.Q.):
One of the most important problems faced by the purchasing department is how much to order at a time. Purchasing in large quantities involve lesser purchasing cost. But cost of carrying them tends to be higher. Likewise if purchases are made in smaller quantities, holding costs are lower while purchasing costs tend to be higher.

Hence, the most economic buying quantity or the optimum quantity should be determined by the purchase department by considering the factors such as cost of ordering, holding or carrying.

. What is Production Planning? Describe with Steps in PPC. (2016,2019)

Ans :Production planning and control is one of the most important phases of production management, it is, as a matter of fact, the nervous system of a manufacturing organization. In manufacturing organization, it is essential that production is carried on in the best manner at the lowest cost, and the goods are of right quality and are produced at the proper time. This can be ensured only through proper planning of production. But, mere planning of production will not solve the problem because production plans are not capable of self-actuating and do not lead to automatic accomplishment. For that the production manager has to take certain steps like, he has to regulate work assignment, review the work progress, and devise methods to bring conformity between the actual performance and planned performance – so that plans chalked out are adhered to and the standards set at the planning stage are properly attained and improved. This is the function of '**production control**'. Production control, therefore, is a directive function which involves the coordination and integration of operations and activities of different factors of production with a view to optimizing efficiency. Optimum efficiency is attainable by proper planning of work, laying down of exact routes which operations shall follow, correct fixing of time-table within which productive operations shall start and come to a close, uninterrupted releasing of orders and work facilities, and timely initiation of appropriate follow-up steps to ensure smooth functioning of the enterprise. In other words, production control involves planning, routing, scheduling, dispatching and follow-up.

Steps in Production Planning and Control

1. Planning
The first important step in production planning and control is concerned with the careful preparation of production plans. Production plans determine what will be produced and where, at what type, by whom, and how. For detailed planning of operations, the relevant information may be obtained from several sources in the enterprise. Information about quantity and quality of products to be manufactured may be obtained from customers' orders and the sales budget,

and information about production facilities may be obtained from the management and the engineering department.

2. Routing

The next important function of production planning and control is routing which involves the determination of the path (i.e. route) of movement of raw materials through various machines and operations in the factory. "Routing includes the planning of where and by whom work shall be done, the determination of the path that work shall follow, and the necessary sequence of operations.

From the above, it can be inferred that routing is one of the highly essential elements and prime considerations of production control because many production control functions are closely related processes and are dependent on routing functions. Thus, it is essential to solve the different problems concerning: appropriate personnel; full utilization of machines; and determining with precise degree the time required in the production process.

3. Scheduling

Scheduling is planning the time element of production – i.e. prior determination of "when work is to be done". It consists of the starting and completion times for the various operations to be performed. In other words, scheduling function determines when an operation is to be performed, or when work is to be completed, the difference lies in the details of the scheduling procedure.

4. Dispatching

Dispatching is the part of production control that translates the paper – work into actual production. It is the group that coordinates and translates planning into actual production. Dispatching function proceeds in accordance with the details worked out under routing and scheduling functions. As such, dispatching sees to it that the material is moved to the correct work place, that tools are ready at the correct place for the particular operations, which the work is moving according to routing instructions.

5. Expediting

Expedition or follow-up is the last stage in the process of production control. This function is designed to keep track of the work effort. The aim is to ensure that what is intended and planned is being implemented. "Expediting consists in reporting production data and investigating variances from predetermined time schedules. The main idea behind expedition is to see that promise is backed up by performance". It includes the following functions:

- The name of the part to be produced, sub-assembly or final assembly
- The quantity to be produced
- Descriptions and numbers of the operations required and their sequence
- The departments involved in each operation
- The tools required for particular operation; and

Machines involved in each operation and starting dates for the operations.

What is recruitment ? Describe the sources of recruitment.

Ans : Recruitment refers to the process of attracting, screening, selecting, and onboarding a qualified person for a job. At the strategic level it may involve the development of an employer brand which includes an 'employee offering'.

The sources of recruitment are broadly divided into internal sources and external sources consisting of the following:

Internal sources of Recruitment:

1**. Present Permanent Employees** : Organizations consider the candidates from this source for higher level of jobs due to availability of most suitable candidates for jobs relatively or equally to external sources, to meet the trade union demands and due to the policy of the organization to motivate the present employees.

2. **Present temporary/casual Employees:** Organizations find this source to fill the vacancies relatively at the lower level owing to the availability of suitable candidates or trade union pressures or in order to motivate them on present job.

3. **Retrenched or Retired Employees**: Employees retrenched due to lack of work are given employment by the organization due to obligation, trade union pressure etc. Sometimes they are re-employed by the organization as a token of their loyalty to the organization or to postpone some interpersonal conflicts for promotion.

4. **Dependents of Deceased, Disabled, retired and present employees**: Some organizations function with a view to developing the commitment and loyalty of not only the employee but also his family members.

5**. Employee Referrals:** Present employees are well aware of the qualifications, attitudes, experience and emotions of their friends and relatives. They are also aware of the job requirements and organizational culture of their company. As such they can make preliminary judgment regarding the match between the job and their friends and relatives.

External Sources of Recruitment

1. Campus Recruitment: These candidates are directly recruited by the Co; from their college/educational institution. They are inexperienced as far as work experience is concerned.

2. Private Employment Agencies/Consultants: Public employment agencies or consultants like ABC Consultants inIndia perform recruitment functions on behalf of a client company by charging fees. Line managers are relieved from recruitment functions and can concentrate on operational activities.

3. Public Employment Exchanges: The Government set up Public Employment Exchanges in the country to provide information about vacancies to the candidates and to help the organization in finding out suitable candidates. As per the Employment Exchange act 1959, makes it obligatory for public sector and private sector enterprises in India to fill certain types of vacancies through public employment exchanges.

Describe methods of training. (2017)

A. On-the-job Training Methods:

1. Coaching

2. Mentoring

3. Job Rotation

4. Job Instruction Technology

5. Apprenticeship

6. Understudy

B. Off-the-Job Training Methods:

1. Lectures and Conferences

2. Vestibule Training

3. Simulation Exercises

4. Sensitivity Training

5. Transactional Training

A. On-the-job training Methods:

Under these methods new or inexperienced employees learn through observing peers or managers performing the job and trying to imitate their behaviour. These methods do not cost much and are less disruptive as employees are always on the job, training is given on the same machines and experience would be on already approved standards, and above all the trainee is learning while earning. Some of the commonly used methods are:

1. Coaching:

Coaching is a one-to-one training. It helps in quickly identifying the weak areas and tries to focus on them. It also offers the benefit of transferring theory learning to practice. The biggest problem is that it perpetrates the existing practices and styles. In India most of the scooter mechanics are trained only through this method.

2. Mentoring:

The focus in this training is on the development of attitude. It is used for managerial employees. Mentoring is always done by a senior inside person. It is also one-to- one interaction, like coaching.

3. Job Rotation:

It is the process of training employees by rotating them through a series of related jobs. Rotation not only makes a person well acquainted with different jobs, but it also alleviates boredom and allows to develop rapport with a number of people. Rotation must be logical.

4. Job Instructional Technique (JIT):

It is a Step by step (structured) on the job training method in which a suitable trainer (a) prepares a trainee with an overview of the job, its purpose, and the results desired, (b) demonstrates the task or the skill to the trainee, (c) allows the trainee to show the demonstration on his or her own, and (d) follows up to provide feedback and help. The trainees are presented the learning material in written or by learning machines through a series called 'frames'. This method is a valuable tool for all educators (teachers and trainers). It helps us:

a. To deliver step-by-step instruction

b. To know when the learner has learned

c. To be due diligent (in many work-place environments)

5. Apprenticeship:

Apprenticeship is a system of training a new generation of practitioners of a skill. This method of training is in vogue in those trades, crafts and technical fields in which a long period is required for gaining proficiency. The trainees serve as apprentices to experts for long periods. They have to work in direct association with and also under the direct supervision of their masters.

The object of such training is to make the trainees all-round craftsmen. It is an expensive method of training. Also, there is no guarantee that the trained worker will continue to work in the same organisation after securing training. The apprentices are paid remuneration according the apprenticeship agreements.

6. Understudy:

In this method, a superior gives training to a subordinate as his understudy like an assistant to a manager or director (in a film). The subordinate learns through experience and observation by participating in handling day to day problems. Basic purpose is to prepare subordinate for assuming the full responsibilities and duties.

B. Off-the-job Training Methods:

Off-the-job training methods are conducted in separate from the job environment, study material is supplied, there is full concentration on learning rather than performing, and there is freedom of expression. Important methods include:

1. Lectures and Conferences:

Lectures and conferences are the traditional and direct method of instruction. Every training programme starts with lecture and conference. It's a verbal presentation for a large audience. However, the lectures have to be motivating and creating interest among trainees. The speaker must have considerable depth in the subject. In the colleges and universities, lectures and seminars are the most common methods used for training.

2. Vestibule Training:

Vestibule Training is a term for near-the-job training, as it offers access to something new (learning). In vestibule training, the workers are trained in a prototype environment on specific jobs in a special part of the plant.

An attempt is made to create working condition similar to the actual workshop conditions. After training workers in such condition, the trained workers may be put on similar jobs in the actual workshop.

This enables the workers to secure training in the best methods to work and to get rid of initial nervousness. During the Second World War II, this method was used to train a large number of workers in a short period of time. It may also be used as a preliminary to on-the job training. Duration ranges from few days to few weeks. It prevents trainees to commit costly mistakes on the actual machines.

3. Simulation Exercises:

Simulation is any artificial environment exactly similar to the actual situation. There are four basic simulation techniques used for imparting training: management games, case study, role playing, and in-basket training.

(a) Management Games:

Properly designed games help to ingrain thinking habits, analytical, logical and reasoning capabilities, importance of team work, time management, to make decisions lacking complete information, communication and leadership capabilities. Use of management games can encourage novel, innovative mechanisms for coping with stress.

Management games orient a candidate with practical applicability of the subject. These games help to appreciate management concepts in a practical way. Different games are used for training general managers and the middle management and functional heads – executive Games and functional heads.

(b) Case Study:

Case studies are complex examples which give an insight into the context of a problem as well as illustrating the main point. Case Studies are trainee centered activities based on topics that demonstrate theoretical concepts in an applied setting.

A case study allows the application of theoretical concepts to be demonstrated, thus bridging the gap between theory and practice, encourage active learning, provides an opportunity for the development of key skills such as communication, group working and problem solving, and increases the trainees" enjoyment of the topic and hence their desire to learn.

(c) Role Playing:
Each trainee takes the role of a person affected by an issue and studies the impacts of the issues on human life and/or the effects of human activities on the world around us from the perspective of that person.

It emphasizes the "real- world" side of science and challenges students to deal with complex problems with no single "right" answer and to use a variety of skills beyond those employed in a typical research project.

In particular, role-playing presents the student a valuable opportunity to learn not just the course content, but other perspectives on it. The steps involved in role playing include defining objectives, choose context & roles, introducing the exercise, trainee preparation/research, the role-play, concluding discussion, and assessment. Types of role play may be multiple role play, single role play, role rotation, and spontaneous role play.

(d) In-basket training:
In-basket exercise, also known as in-tray training, consists of a set of business papers which may include e-mail SMSs, reports, memos, and other items. Now the trainer is asked to prioritise the decisions to be made immediately and the ones that can be delayed.

Manpower Planning:

Manpower Planning which is also called as Human Resource Planning consists of putting right number of people, right kind of people at the right place, right time, doing the right things for which they are suited for the achievement of goals of the organization. Human Resource Planning has got an important place in the arena of industrialization. Human Resource Planning has to be a systems approach and is carried out in a set procedure. The procedure is as follows:

1.Analysing the current manpower inventory

2.Making future manpower forecasts

3.Developing employment programmes

4.Design training programmes **Break even analysis**

        The break-even point (BEP) or break-even level represents the sales amount—in either unit (quantity) or revenue (sales) terms—that is required to cover total costs, consisting of both fixed and variable costs to the company. Total profit at the break-even point is zero. It is only possible for a firm to Break-even, if the dollar value of sales is higher than the variable cost per unit.
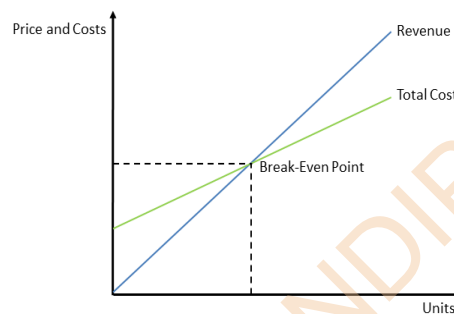
The main purpose of break-even analysis is to determine the minimum output that must be exceeded in order for a business to make profit. The break-even point is one of the simplest, yet least utilized analytical tools by a business's management team. Identifying a breakeven point helps to provide a dynamic view of the relationships between sales, costs, and profits made. For example, expressing break-even sales as a percentage of actual sales can give managers a chance to understand when to expect to break even (by linking the percent to when in the week/month this percent of sales might occur).

What Are the 4 Ps of marketing ?

The four Ps of marketing are the key factors that are involved in the marketing of a good or service. They are the product, price, place, and promotion of a good or service. Often referred to as the marketing mix, the four Ps are constrained by internal and external factors in the overall business environment, and they interact significantly with one another.

Product

Product refers to a good or service that a company offers to customers. Ideally, a product should fulfill an existing consumer demand. Or a product may be so compelling that consumers believe they need to have it and it creates a new demand. To be successful, marketers need to

understand the life cycle of a product, and business executives need to have a plan for dealing with products at every stage of their life cycle.

Price

Price is the cost consumers pay for a product. Marketers must link the price to the product's real and perceived value, but they also must consider supply costs, seasonal discounts, and competitors' prices. In some cases, business executives may raise the price to give the product the appearance of being a luxury. Alternatively, they may lower the price so more consumers can try the product.

Place

When a company makes decisions regarding place, they are trying to determine where they should sell a product and how to deliver the product to the market. The goal of business executives is always to get their products in front of the consumers that are the most likely to buy them.

Promotion

Promotion includes advertising, public relations, and promotional strategy. The goal of promoting a product is to reveal to consumers why they need it and why they should pay a certain price for it.

UNIT-6

LEADERSHIP

Leadership is the art of motivating a group of people to act toward achieving a common goal. In a business setting, this can mean directing workers and colleagues with a strategy to meet the company's needs.

DIFFERENCE BETWEEN MANAGER & LEADER

BASIS FOR COMPARISON	LEADER	MANAGER
Meaning	A leader is a person who influences his subordinates to achieve a specified goal.	A manager is a person who manages the organisation and is responsible for planning, direction, coordination and control

BASIS FOR COMPARISON	LEADER	MANAGER
Approach	Sets Direction	Plans details
Attribute	Foresightedness	Mind
Subordinate	Followers	Employees
Style	Transformational	Transactional
Decision	Facilitates decision	Makes decision
Aim	Growth and development.	Attainment of the required result.
Focus	People	Process and Procedure
Change	Leaders promotes change.	Mangers react to change.
Conflict	Uses conflict as an asset	Avoid conflict
People	Aligns people	Organizes people
Strives	For effectiveness	For efficiency

Leadership Styles

Leadership style is the manner and approach of providing direction, implementing plans, and motivating people.

Authoritarian or autocratic - the leader tells his or her employees what to do and how to do it, without getting their advice

Participative or democratic - the leader includes one or more employees in the decision making process, but the leader normally maintains the final decision making authority

Delegative or laissez-fair (free-rein) - the leader allows the employees to make the decisions, however, the leader is still responsible for the decisions that are made

Maslow Motivation Theory

The Hierarchy of Needs

The Maslow motivation theory is one of the best known and most influential theories on workplace motivation.

Psychologist Abraham Maslow first developed his famous theory of individual development and motivation in the 1940's. He suggested that human beings have a hierarchy of needs. That is, that all humans act in a way which will address basic needs, before moving on to satisfy other, so-called higher level needs.

The Maslow motivation theory is typically represented by 5 steps:

- **Physiological needs – such as hunger, thirst and sleep**
- **Safety needs – such as security, protection from danger and freedom from pain.**
- **Social needs – sometimes also referred to as love needs such as friendship, giving and receiving love, engaging in social activities and group membership.**
- **Esteem needs – these include both self-respect and the esteem of others. For example, the desire for self-confidence and achievement, and recognition and appreciation.**
- **Self-actualization – This is about the desire to develop and realize your full potential. To become everything you can be.**

FACTORS AFFECTING MOTIVATION

Motivating your employees does not have to be difficult or cost the earth, however it does require a balance of a few factors. Here are 5 factors we feel are key to creating motivated employees:

1. Reward and recognition

Reward and recognition come hand in hand. Recognition for good work has a limited shelf life; praise begins to lose its impact if not accompanied by reward. Exceptional work deserves reward and while recognition is sufficient in certain cases, employees begin to lose motivation if they are not rewarded for extra effort.

2. Development

Development is very important for motivating employees; studies have shown that 20% of employees prefer career development opportunities and training to monetary reward. Development makes an employee self-dependent and allows them to contribute more effectively in the workplace, it also helps employees to enhance their input to your business.

3. Leadership

A study by Gallup found that, only [2 in 10 employees](#) strongly agree that their performance is managed in a way that motivates them to do outstanding work – this clearly displays how much a good leader motivates employees. A good leader has the knowledge of what truly inspires loyal and motivated humans to perform at a high level.

4. Work life balance

Providing a good work life balance nurtures employees. Motivated employees are less likely to take sick days, leave the organisation and will be more prepared to work longer hours. Equally these same employees are more likely to 'burn out' and will feel less motivated if there is not a healthy work life balance.

5. Work environment

Motivated employees thrive in a positive work environment. This refers to the physical and non-physical environment – the physical environment is the office space and surrounding areas. Employees work better in open spaces that stimulate the senses.

COMMON BARRIERS TO EFFECTIVE COMMUNICATION

Regardless of the [type of communication](#): verbal, nonverbal, written, listening or visual, if we don't communicate effectively, we put ourselves and others at risk. Besides physical and technical barriers, there are six barriers to effective communication every employee and manager should strive to eradicate.

Dissatisfaction or Disinterest With One's Job

If you are unhappy or have lost interest in your job, you are far less likely to communicate effectively – both on the giving and receiving ends. In other words, your heart isn't in it. This barrier, is perhaps the most difficult to overcome because it involves changing a mindset, and thus it typically doesn't change until the person leaves.

Inability to Listen to Others

Active listening is an important aspect of effective communication. You cannot engage with someone if you are not listening to them because you will tend to make assumptions about their needs based on your perceptions versus reality.

Lack of Transparency & Trust

It is extremely difficult to communicate anything when there is a lack of transparency and trust. For example, if your staff believes you are holding something back, they will be anxious, some will speculate, and as a result, it will be more difficult for them to process any attempt you make to communicate with them.

Communication Styles (when they differ)

Everyone has their own communication style. Some people are very direct while others prefer a more indirect approach. Some use detailed data, while others rely on generalities, and so forth. Occasionally, one person is so entrenched in their way of communicating, they find it difficult to communicate with others who rely on a different style. You might hear comments such as, "Mary never explains what she wants me to do, she's never specific" or "Bill gets so caught up in the weeds, that I lose focus on the bigger picture."

Conflicts in the Workplace

Conflict can happen for a variety of reasons and when it does, it becomes a barrier to effective communication. The nature of the conflict is not necessarily important, what is important is working to resolve the conflict. When conflict is not eradicated, it grows and then people begin to take sides, which further impedes effective communication.

Cultural Differences & Language

It is important to understand the cultural differences in communication. But don't just think international as in remembering that in Japan one's surname precedes their given name. There can also be regional differences – for example, a northerner might not like the term "y'all" or even understand the more comprehensive version, "all y'all." While these examples may seem trivial, the point is that cultural differences can occur within the boundaries of the US, and when one does not recognize cultural differences, they risk offending the other person. It is in the offense that communication breaks down.

UNIT-7

HUMAN RELATIONSHIP & PERFORMANCE IN ORGANIZATION

Having successful relationships is key to the success of an organization because it involves its most valuable asset: its employees. In this "Human Relations in Business" training course, you'll learn skills such as motivation, communication, leadership, teambuilding, understanding an organization's climate, and building morale. In addition, you'll review conflict resolution, the art of negotiation, and managing change. This course will teach you conflict resolution strategies and how to improve formal and informal group relationships in the workplace as well. Learning how to manage human relations in the workplace is a crucial skill for all levels of employees at an organization. Taking the time to improve your communication skills, for example, can go a long way to improving formal and informal relationships in your organization. This course offers a clear definition of human relations and helps you review the types of human relations you'll encounter in the workplace. You'll learn the behavior process behind motivation, building better teams, and morale-building. Finally, the course will review negotiations and how to manage conflict and change.

Learning objectives
- Understand human relations and the functions of management
- Discover the dynamics of formal vs informal group relationships
- Review conflict management and resolution steps
- Understand the steps to effective negotiation
- Discover ways to reduce fear and resistance to change

Skills you will learn
- Communication
- Team building
- Negotiation
- Conflict management

RELATIONSHIPS WITH PEERS, SUPERIORS AND SUBORDINATES

It is always an experience to interact with the peer, superior and subordinate groups. All the three groups of people give a different feel and learning, when we interact with them. All the three groups are important and very much existent in all areas of life. Whether it is family, office, friends, mentors, teachers, bosses, acquaintances, etc, all of them are typically divided into three categories.

Peers:
The first category will always be peers because we respond and reciprocate to them very easily and very firstly. They are typically the same level as us either in intelligent quotient or status or family structure or in any other way at par with us. We normally tend to be comfortable with them in terms of talking and interacting. One more reason of a person being comfortable with peers is they have similar problems and they empathize very well with each other. For example colleagues in office, friends, cousins, acquaintances, social circles, etc.

Superiors:
The second category is superiors. The teachers, mentors, bosses, family, etc generally fall in this category. They are the ones who are higher than us as far as the knowledge or experience or intellect quotient or relationship goes. They expect a certain kind of respectful treatment from us, while we deal with them. We normally tend to take time to interact with them directly; more so, particularly because they also have an expectation barrier to break first with us. They are the ones from whom you learn effortlessly because we know that they know more than us. For example uncles, aunts, bosses, bosses of bosses, mentors, aged consultants, senior positions in any way, etc.

Subordinates:
The third category opens up the scope of being a mentor to others, as well as taking work from them or helping them to cope up. They are lesser either by age, experience, knowledge or relationship and that's why we feel good dealing with them and sometimes even show them off our seniority. They are the ones who need our reciprocation for their growth but still our responses to them are important; if we have to take work from them or they are in our social circles or fall in as a team to achieve targets in professional fronts.

TQM

A core definition of total quality management (TQM) describes a management approach to long-term success through customer satisfaction. In a TQM effort, all members of an organization participate in improving processes, products, services, and the culture in which they work.

PRIMARY ELEMENTS OF TQM

TQM can be summarized as a management system for a customer-focused organization that involves all employees in continual improvement. It uses strategy, data, and effective communications to integrate the quality discipline into the culture and activities of the organization. Many of these concepts are present in modern quality management systems, the successor to TQM. Here are the 8 principles of total quality management:

1. **Customer-focused:** The customer ultimately determines the level of quality. No matter what an organization does to foster quality improvement—training employees, integrating quality into the design process, or upgrading computers or software—the customer determines whether the efforts were worthwhile.
2. **Total employee involvement:** All employees participate in working toward common goals. Total employee commitment can only be obtained after fear has been driven from the workplace, when empowerment has occurred, and when management has provided the proper environment. High-performance work systems integrate continuous improvement efforts with normal business operations. Self-managed work teams are one form of empowerment.
3. **Process-centered:** A fundamental part of TQM is a focus on process thinking. A process is a series of steps that take inputs from suppliers (internal or external) and transforms them into outputs that are delivered to customers (internal or external). The steps required to carry out the process are defined, and performance measures are continuously monitored in order to detect unexpected variation.
4. **Integrated system:** Although an organization may consist of many different functional specialties often organized into vertically structured departments, it is the horizontal processes interconnecting these functions that are the focus of TQM.
5. **Strategic and systematic approach:** A critical part of the management of quality is the strategic and systematic approach to achieving an organization's vision, mission, and goals. This process, called strategic planning or strategic management, includes the formulation of a strategic plan that integrates quality as a core component.
6. **Continual improvement:** A large aspect of TQM is continual process improvement. Continual improvement drives an organization to be both analytical and creative in finding ways to become more competitive and more effective at meeting stakeholder expectations.
7. **Fact-based decision making:** In order to know how well an organization is performing, data on performance measures are necessary. TQM requires that an organization continually collect and analyze data in order to improve decision making accuracy, achieve consensus, and allow prediction based on past history.
8. **Communications:** During times of organizational change, as well as part of day-to-day operation, effective communications plays a large part in maintaining morale and in motivating employees at all levels. Communications involve strategies, method, and timeliness.

UNIT-8

What are intellectual property rights?

Intellectual property rights are the rights given to persons over the creations of their minds. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time.

Intellectual property rights are customarily divided into two main areas:

(i) Copyright and rights related to copyright.

The rights of authors of literary and artistic works (such as books and other writings, musical compositions, paintings, sculpture, computer programs and films) are protected by copyright, for a minimum period of 50 years after the death of the author.

Also protected through copyright and related (sometimes referred to as "neighbouring") rights are the rights of performers (e.g. actors, singers and musicians), producers of phonograms (sound recordings) and broadcasting organizations. The main social purpose of protection of copyright and related rights is to encourage and reward creative work.

(ii) Industrial property.

Industrial property can usefully be divided into two main areas:

One area can be characterized as the protection of distinctive signs, in particular trademarks (which distinguish the goods or services of one undertaking from those of other undertakings) and geographical indications (which identify a good as originating in a place where a given characteristic of the good is essentially attributable to its geographical origin).

The protection of such distinctive signs aims to stimulate and ensure fair competition and to protect consumers, by enabling them to make informed choices between various goods and services. The protection may last indefinitely, provided the sign in question continues to be distinctive.

Other types of industrial property are protected primarily to stimulate innovation, design and the creation of technology. In this category fall inventions (protected by patents), industrial designs and trade secrets.

The social purpose is to provide protection for the results of investment in the development of new technology, thus giving the incentive and means to finance research and development activities.

A functioning intellectual property regime should also facilitate the transfer of technology in the form of foreign direct investment, joint ventures and licensing.

The protection is usually given for a finite term (typically 20 years in the case of patents).

While the basic social objectives of intellectual property protection are as outlined above, it should also be noted that the exclusive rights given are generally subject to a number of limitations and exceptions, aimed at fine-tuning the balance that has to be found between the legitimate interests of right holders and of users.

FACTORIES ACT 1948 & PAYMENT OF WAGES ACT 1936

CHECK LIST

Applicability of the Act
Any premises whereon 10 or more persons with the aid of power or 20 or more workers are/were without aid of power working on any dayd preceding 12 months, wherein Manufacturing process is being carried on.

Sec.2(ii)

Employer to ensure health of workers pertaining to
- Cleanliness Disposal of wastes and effluents
- Ventilation and temperature dust and fume
- Overcrowding Artificial humidification Lighting
- Drinking water Spittons.

Secs. 11 to 20

Registration & Renewal of Factories
To be granted by Chief Inspector of Factories on submission of prescribed form, fee and plan.

Secs. 6

Safety Measures
- Facing of machinery
- Work on near machinery in motion.
- Employment prohibition of young persons on dangerous machines.
- Striking gear and devices for cutting off power.
- Self-acting machines.
- Casing of new machinery.
- Prohibition of employment of women and children near cotton-openers.
- Hoists and lifts.

Welfare Measures
- Washing facilities
- Facilities for storing and drying clothing
- Facilities for sitting
- First-aid appliances – one first aid box not less than one for every 150 workers.
- Canteens when there are 250 or more workers.
- Shelters, rest rooms and lunch rooms when there are 150 or more workers.
- Creches when there are 30 or more women workers.
- Welfare office when there are 500 or more workers.

Working Hours, Spread Over & Overtime of Adults
Weekly hours not more than 48.
Daily hours, not more than 9 hours.
Intervals for rest at least ½ hour on working for 5 hours.
Spreadover not more than 10½ hours.
Overlapping shifts prohibited.
Extra wages for overtime double than normal rate of wages.
Restrictions on employment of women before 6AM and beyond 7 PM.

Secs. 51, 54 to 56, 59 & 60

Employment of Young Persons
- Prohibition of employment of young children e.g. 14 years.
- Non-adult workers to carry tokens e.g. certificate of fitnekss.
- Working hours for children not more than 4 ½ hrs. and not permitted to work during night shift.

Secs. 51, 54 to 56, 59 & 60

Annual Leave with Wages
A worker having worked for 240 days @ one day for every 20 days and for a child one day for working of 15 days. Accumulation of leave for 30 days.

Secs. 79

OFFENCE	PENALTIES Sec.92 to
• For contravention of the Provisions of the Act or Rules	• Imprisonment upto 2 years or fine upto Rs.1,00,000 or both
• On Continuation of contravention	• Rs.1000 per day
• On contravention of Chapter IV pertaining to safety or dangerous operations.	• Not less than Rs.25000 in case of death. • Not less than Rs.5000 in case of serious injuries.
• Subsequent contravention of some provisions	• Imprisonment upto 3 years or fine not less than Rs.10,000 which may extend to Rs.2,00,000.
• Obstructing Inspectors	• Imprisonment upto 6 months or fine upto Rs.10,000 or both.
• Wrongful disclosing result pertaining to results of analysis.	• Imprisonment upto 6 months or fine upto Rs.10,000 or both.
• For contravention of the provisions of Sec.41B, 41C and 41H pertaining to compulsory disclosure of information by occupier, specific responsibility of occupier or right of workers to work imminent danger.	• Imprisonment upto 7 years with fine upto Rs.2,00,000 and on continuation fine @ Rs.5,000 per day. • Imprisonment of 10 years when contravention continues for one year.

What are the Key Components?

IoT is not just transforming connectivity among devices and objects but it is also allowing the people to get remote access easily. With so many [advantages of IoT](), it is interesting to see the main ecosystem components that IoT works on. Here are the main components on which IoT works on.

1. Gateway

Gateway enables easy management of data traffic flowing between protocols and networks. On the other hand, it also translates the network protocols and makes sure that the devices and sensors are connected properly.

It can also work to preprocess the data from sensors and send them off to next level if it is configured accordingly. It is essential to configure it as the presence of TCP/IP protocol allows easy flow.

Not only this, it gives proper encryption with the network flow and data transmission. The data flowed through it is in the higher order that is protected by using latest encryption techniques. You can assume it like an extra layer between the cloud and devices that filter away the attack and illegal network access.

2. Analytics

The analog data of devices and sensors are converted into a format that is easy to read and analyze. This is all possible due to the IoT ecosystem that manages and helps in improving the system. The main factor that is influenced is security.

The most important function of IoT technology is that it supports real-time analysis that easily observes the irregularities and prevents any loss or scam. Preventing the malicious things to attack the smart devices will not only give you a sense of security but also it will save all your private data from being used for illegal purposes.

The big companies collect the data in bulk and analyze it to see the future opportunity so that they can easily develop more business advancement and gain something out of it. This analysis easily helps in setting future trends that have a capability to rule the market. From this analysis, they can be one step ahead of the time and easily achieve success. Data may be a small word but it holds the power to make or break the business if used correctly.

3. Connectivity Of Devices

The main components that complete connectivity layer are sensors and devices. Sensors collect the information and send it off to the next layer where it is being processed. With the advancement of technology, semiconductor technology is used that allows the production of micro smart sensors that can be used for several applications.

The main components are:

- Proximity detection,

- Humidity or Moisture Level,

- Temperature sensors and thermostats,

- Pressure sensors,

- RFID tags.
  The modern smart sensors and devices use various ways to be connected. The wireless networks like LORAWAN, Wi-Fi, and Bluetooth makes it easy for them to stay connected. They have their own advantages and drawbacks that are classified in various forms like efficiency rate, data transfer, and power.

4. Cloud

With the help of internet of things ecosystem, companies are able to collect bulk data from the devices and applications. There are various tools that are used for the purpose of data collection that

can collect, process, handle and store the data efficiently in real time. It is also responsible for making a tough decision that can easily break the deal. This all is done by one system that is IoT Cloud.

It is an intimidating high-performance network that connects servers together to optimize the performance of data process that is being processed by many devices at once. It also helps in controlling traffic and delivering accurate data analytics results.

5. User Interface

This is another factor on which IoT ecosystem depends immensely. It provides a visible and physical part that can be easily accessed by the user. It is important for the developer to create a user-friendly interface that could be accessed without putting any extra efforts in it and that can help in easy interaction.

6. Standards And Protocols

The webpages are now using the HTML format with the cascading style sheet. This has made the internet more stable and reliable service to use. They are the most used standard protocols making it no just friendly but easily acceptable. However, IoT doesn't have that standard.

It is important to choose a platform the IoT that can help in determining the way your platform will interact with the system. Thus, you will be able to have an interaction with devices and networks with the same standard as yours. It is important for having the same protocol to have a successful interaction.

7. Database

Internet of things are increasing dynamically and is all dependent on data that are used immensely in the data centers. It is essential to have a proper database system that can store and manage the data that is being gathered from various device and end-users. There are also various management tools that offer many automated features that help in easy accumulation of data stored and managed in bulk at the same place.

8. Automation

As mentioned above, the database system is using the automotive features that help in managing data and accumulating it. However, the data management is the only limited thing that is used by the internet of things. It is now used for a much more advanced version that allows the automatic adjustment of the wireless things. For example, you can easily control light with a click of the remote. The air conditioner is now connected to your smartphone and you can switch them on and off whenever you want. Even it is possible to play with the temperature.

What is the Internet of Things (IOT)?

The Internet of Things, or IoT, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. Thanks to the arrival of super-cheap computer chips and the ubiquity of wireless networks, it's possible to turn anything, from something as small as a pill to something as big as an aeroplane, into a part of the IoT. Connecting up all these different objects and adding sensors to them adds a level of digital intelligence to devices that would be otherwise dumb, enabling them to communicate real-time data without involving a human being. The Internet of Things is making the fabric of the world around us more smarter and more responsive, merging the digital and physical universes.

Appliations of IOT

The applications of IoT technologies are multiple, because it is adjustable to almost any technology that is capable of providing relevant information about its own operation, about the performance of an activity and even about the environmental conditions that we need to monitor and control at a distance. Nowadays, many companies from different sectors or sectors are adopting this technology to simplify, improve, automate and control different processes. Next, we show some of the surprising practical applications of the IoT.

1. Wearables.

Virtual glasses, fitness bands to monitor for example calorie expenditure and heart beats, or GPS tracking belts, are just some examples of wearable devices that we have been using for some time now. Companies such as Google, Apple, Samsung and others have developed and introduced the Internet of Things and the application thereof into our daily lives.

These are small and energy efficient devices, which are equipped with sensors, with the necessary hardware for measurements and readings, and with software to collect and organize data and information about users.

2. Health.

The use of wearables or sensors connected to patients, allows doctors to monitor a patient's condition outside the hospital and in real-time. Through continuously monitoring certain metrics and automatic alerts on their vital signs, the Internet of Things helps to improve the care for patients and the prevention of lethal events in high-risk patients.

3. Traffic monitoring.

The Internet of things can be very useful in the management of vehicular traffic in large cities, contributing to the concept of smart cities.

When we use our mobile phones as sensors, which collect and share data from our vehicles through applications such as Waze or Google Maps, we are using the Internet of Things to inform us and at the same time contribute to traffic monitoring, showing the conditions of the different routes, and feeding and improving the information on the different routes to the same destination, distance, estimated time of arrival.

4. Smart grid and energy saving.

The progressive use of intelligent energy meters, or meters equipped with sensors, and the installation of sensors in different strategic points that go from the production plants to the different distribution points, allows better monitoring and control of the electrical network.

5. Agriculture.

Smart farms are a fact. The quality of soil is crucial to produce good crops, and the Internet of Things offers farmers the possibility to access detailed knowledge and valuable information of their soil condition.

6. Hospitality.

The application of the IoT to the hotel industry brings with it interesting improvements in the quality of the service. With the implementation of electronic keys, which are sent directly to the mobile devices of each guest, it is possible to automate various interactions.

7. Smart grid and energy saving.

The progressive use of intelligent energy meters, or meters equipped with sensors, and the installation of sensors in different strategic points that go from the production plants to the different distribution points, allows better monitoring and control of the electrical network.

8. Water supply.

A sensor, either incorporated or adjusted externally to water meters, connected to the Internet and accompanied by the necessary *software* , helps to collect, process and analyze data, which allows understanding the behavior of consumers, detecting faults in the supply service, report results and offer courses of action to the company that provides the service.