UNIT 1

MORAL

Morals are the welfare principles enunciated by the wise people, based on their experience and wisdom. They were edited, changed or modified or evolved to suit the geography of the region, rulers (dynasty), and in accordance with development of knowledge in science and technology and with time.

Difference between Morality and Ethics

MORALITY	ETHICS
1. More general and prescriptive based on customs and traditions.	1. Specific and descriptive. It is a critical reflection on morals.
2. More concerned with the results of wrong action, when done.	2. More concerned with the results of a right action, when not done.
3. Thrust is on judgment and punishment, in the name of God or by laws.	3. Thrust is on influence, education, training through codes, guidelines, and correction.
4. In case of conflict between the two, morality is given top priority, because the damage is more.	4. Less serious, hence second priority only.
5. Example: Character flaw, corruption, extortion, and crime.	5. Example: Notions or beliefs about manners, tastes, customs, and towards laws.

ETHICS

Ethics is the word that refers to morals, values, and beliefs of the individuals, family or the society.

- Basically, it is an activity and process of inquiry.
- Secondly, it is different from non-moral problems, when dealing with issues and controversies.
- Thirdly, ethics refers to a particular set of beliefs, attitudes, and habits of individuals.
- Fourth, it is used to mean 'morally correct'.

WORK ETHICS

Work ethics is defined as a set of attitudes concerned with the value of work, which forms the motivational orientation. The 'work ethics' is aimed at ensuring the economy, productivity, safety, health and hygiene, privacy, security, cultural and social development, welfare, environment, and offer opportunities for all, according to their abilities, but without discrimination.

Problems in the industrial/business scenario

Many complex social problems exist in the industrial/business scenario, because:

1. The people desire to be recognized as individuals and treated with dignity, as living human
   beings.

2. Economic independence
3. Pay as well as the pace of work should be in commensurate with the expertise required, acquired, and utilized in the persons
4. Privacy of the employee, including women, is to be protected
5. Security during job and upon retirement: accepted only in government jobs, public limited companies, and corporate organizations.
6. Recognition to non-work activities, such as leisure, paid holiday on the day of visit of a dignitary, social service, and other developmental activities.
7. The quality of work life deserves to be improved.
8. Employee alienation: Absence of or inadequate 'recognition and reward system' and 'grievance redressal system', lack of transparency in policy implementation etc. lead to ethical problems, affecting the work ethics.
9. Work is considered as a necessary evil. It is a thing one must do in order to avoid worse evils, such as dependency and poverty.

10. As per the Protestant Work Ethics, the financial success is a sign that is favored by God. It means making maximal profit is a duty mandated by God.

Service Learning

Service learning refers to learning the service policies, procedures, norms, and conditions, other than 'the technical trade practices'. It helps the individuals to interact ethically with colleagues, to effectively coordinate with other departments, to interact cordially with suppliers as well as the customers, and to maintain all these friendly interactions.

It is distinguished in the following ways:

1. **Connection to curriculum**: Integrating the learning into a service project is a key to successful service learning.
2. **Learner's voice**: Beyond being actively engaged in the project, trainees have the opportunity to select, design, implement, and evaluate their service activity.
3. **Reflection**: Structured opportunities are created to think, talk, and write about the service experience.
4. **Partners in the community**: Partnership with community agencies is used to identify genuine needs, provide mentorship, and contribute input such as labor and expertise towards completing the project.

RESPECT FOR OTHERS

This is a basic requirement for nurturing friendship, team work, and for the synergy it promotes and sustains. The principles enunciated in this regard are:
1. Recognize and accept the existence of other persons as human beings.

2. Respect others' ideas, words, and labor. One need not accept or approve or award them, but shall listen to them first.

3. Show ‘goodwill’ on others. Love others. Allow others to grow.

LIVING PEACEFULLY

o live peacefully, one should start install peace within self. Then one can spread peace to family, office, and then to the world, including the environment.

One should adopt the following means to live peacefully, in the world:

Nurture

1. Order in one’s life.
2. Pure thoughts in one’s soul.
3. Creativity in one’s head.
4. Beauty in one’s heart.

Get

5. Good health/body.

Act

6. Help the needy with head, heart, and hands.
7. Not hurting and torturing others either physically, verbally, or mentally.

Factors that promote living peacefully

The following are the factors that promote living, with internal and external peace:

1. Conducive environment.
2. Secured job and motivated with ‘recognition and reward’.
3. Absence of threat or tension by pressure.
4. Absence of unnecessary interference or disturbance.
5. Healthy labor relations and family situations.
6. Service to the needy with love and sympathy.

CARING

Caring is a process which exhibits the interest in, and support for, the welfare of others with fairness, impartiality and justice in all activities, among the employees, in the context of professional ethics. It includes showing respect to the feelings of others, and also respecting and preserving the interests of all others concerned. Caring is friendship, membership in social clubs and professional societies.

SHARING

Sharing is a process that describes the transfer of knowledge, experience, commodities and facilities with others. The transfer should be genuine, legal, positive, voluntary, and without any expectation in return. Sharing is voluntary and it cannot be driven by force, but motivated successfully through ethical principles.

SPIRITUALITY

Spirituality is a way of living that emphasizes the constant awareness and recognition of the spiritual dimension of nature and people, with a dynamic balance between the material development and the spiritual development.

Spirituality in workplace

1. Verbally respect the individuals as humans and recognize their values in all decisions and actions.
2. Get to know the people with whom you work and know what is important to them. Know their goals, desires, and dreams too.
3. State your personal ethics and your beliefs clearly.
4. Support causes outside the business.
5. Encourage leaders to use value-based discretion in making decisions.
6. Demonstrate your own self-knowledge and spirituality in all your actions.
7. Do unto others as you would have them do unto you.

UNIT 2

DEFINE ENGINEERING ETHICS

Engineering Ethics is the activity and discipline aimed at
(a) understanding the moral values that ought to guide engineering profession or practice,
(b) resolving moral issues in engineering, and
(c) justifying the moral judgments in engineering. It deals with set of moral problems and issues connected with engineering.
Engineering ethics is defined by the codes and standards of conduct endorsed by engineering (professional) societies with respect to the particular set of beliefs, attitudes and habits displayed by the individual or group.

SENSES OF ENGINEERING ETHICS

There are two different senses of engineering ethics, namely the Normative and the Descriptive senses. The normative sense include:

a) Knowing moral values, finding accurate solutions to moral problems and justifying moral judgments in engineering practices
b) Study of decisions, policies, and values that are morally desirable in the engineering practice and research
c) Using codes of ethics and standards and applying them in their transactions by engineers.

The descriptive sense refers to what specific individual or group of engineers believe and act, without justifying their beliefs or actions.

MORAL DILEMMA

Dilemmas are situations in which moral reasons come into conflict, or in which the application of moral values are problems, and one is not clear of the immediate choice or solution of the problems. Moral reasons could be rights, duties, goods or obligations.

The three complex situations leading to moral dilemmas are:
1. The problem of vagueness: One is unable to distinguish between good and bad principle. For example, code of ethics specifies that one should obey the laws and follow standards. Refuse bribe or accept the gift, and maintain confidentiality.
2. The problem of conflicting reasons: One is unable to choose between two good moral solutions. One has to fix priority, through knowledge or value system.
3. The problem of disagreement: There may be two or more solutions and none of them mandatory. These solutions may be better or worse in some respects but not in all aspects. One has to interpret, apply different morally reasons, and analyze and rank the decisions. Select the best suitable, under the existing and the most probable conditions.

MORAL AUTONOMY

Moral autonomy is defined as, decisions and actions exercised on the basis of moral concern for other people and recognition of good moral reasons. Alternatively, moral autonomy means 'self-determinant or independent'. The autonomous people hold moral beliefs and attitudes based on their critical reflection rather than on passive adoption of the conventions of the society or profession. Moral autonomy may also be defined as a skill and habit of thinking rationally about the ethical issues, on the basis of moral concern.

CONSENSUS AND CONTROVERSY

Consensus means agreement and controversy means conflict or disagreement.

When an individual exercise moral autonomy, he may not be able to attain the same results as other people obtain in practicing their moral autonomy. Here there might be some differences in the practical application of moral autonomy. This kind of controversies i.e., disagreements are inevitable.
Since exercising moral autonomy is not as precise and clear cut as arithmetic, therefore the moral disagreements are natural and common. So in order to allow scope for disagreement, the tolerance is required among individuals with autonomous, reasonable and responsible thinking.

MORAL AUTONOMY AND MORAL AUTHORITY

1. Moral autonomy and respect for authority are compatible with each other. Exercising moral autonomy is based on the moral concern for other people and recognition of good moral reasons. Also, moral autonomy emphasizes the capabilities and responsibilities of people. Authority provides the framework through which learning attitudes are encouraged.
2. Sometimes, conflicts will arise between individuals 'need for autonomy and the need for consensus about authority. This situation can be rescued by having open and frank discussion regarding a moral issue with the help of authority.

MODELS OF PROFESSIONAL ROLES

Promotion of public good is the primary concern of the professional engineers. There are several role models to whom the engineers are attracted. These models provoke their thinking, attitudes and actions.

1. **Savior**
   The engineer as a savior, save the society from poverty, illiteracy, wastage, inefficiency, ill health, human (labor) dignity and lead it to prosperity, through technological development and social planning. For example, R.L. Stevenson.
2. **Guardian**
   He guards the interests of the poor and general public. As one who is conversant with technology development, is given the authority befitting his expertise to determine what is best suited to the society. For example, Lawrence of Arabia (an engineer).
3. **Bureaucratic Servant**
   He serves the organization and the employers. The management of an enterprise fixes its goals and assigns the job of problem solving to the engineer, who accepts the challenge and shapes them into concrete achievements. For example, Jamshedji Tata.
4. **Social Servant**
   It is one who exhibits social responsibility. The engineer translates the interest and aspirations of the society into a reality, remembering that his true master is the society at large. For example, Sir M.Viswesvarayya.
5. **Social Enabler and Catalyst**
   One who changes the society through technology. The engineer must assist the management and the society to understand their needs and make informed decisions on the desirable technological development and minimize the negative effects of technology on people and their living environment. Thus, he shines as a social enabler and a catalyst for further growth. For example, Sri Sundarlal Bahuguna.
6. **Game Player**
   He is neither a servant nor master. An engineer is an assertive player, not a passive player who may carry out his master's voice. He plays a unique role successfully within the organization, enjoying the excitement of the profession and having the satisfaction of surging ahead in a competitive world. For example, Narayanamurthy, Infosys and Dr. Kasthurirangan, ISRO.

MORAL RESPONSIBILITIES

Moral responsibility as applied to a professional: A professional must be responsible morally, in creating internal good or good outcomes, and eliminating /minimizing un- intended side-effects, from engineering and technology. It includes:

a) Obligations: A commitment to moral actions (primary obligation to protect the safety of the human beings and respect their rights)
b) Conscientious: A comprehensive perspective to accept the duties, and diligently do the right things by putting their heart, head and hands (awareness of the experimental nature of the product/project, anticipating possible and unexpected outcomes and putting efforts to monitor them)
c) Accountability (being accountable for the decisions, actions, and the results of product/ project including safety)
d) Praiseworthy/Blameworthy as applied to context of doing things right/doing things wrongly, respectively.

PROFESSIONAL RESPONSIBILITY

The most comprehensive virtue of engineers is Professional Responsibility. This consists of five types of virtues, as follows:

1. Self-direction virtues are fundamental and necessary in exercising moral responsibility. On the basis of 'understanding and cognition', it includes self-understanding, humility, and good moral judgment. On the basis of 'commitment and action', it covers courage, self-discipline, perseverance, self-respect, and integrity.
2. Public-spirited virtues focus on the good of the clients and the public. It includes the respect for rights, non-malfeasance. Engineering codes go a step further and prescribe beneficence that includes preventing or removing harm to others and also promoting the public safety, health, and welfare, generosity, and justice in all decisions and actions.
3. Team-work virtues enable the professionals to work successfully with others. They include collegiality, cooperativeness, communicative ability, and respect for legitimate authority. Responsible exercise of authority and the ability to motivate other to achieve are also the relevant to team-work virtues.
4. Proficiency virtues, which mean the mastery of technical skills. It includes competence, diligence, creativity, excellence, and self-renewal through continuing education.
5. Cardinal virtues: Wisdom, courage, temperance and justice. Wisdom is perception of truth and ability to distinguish between the right and wrong. Courage means a firm and elevated mind. Temperance represents order in words and actions. Justice is preserving humanity and observing the faith of contracts. Although these virtues ring religious tones, they are very relevant to the engineering practice.

DUTY ETHICS

A. The duty ethics theory, proposed by **Immanuel Kant** states, that actions are consequences of performance of one's duties such as, 'being honest', 'not cause suffering of others', 'being fair to others including the meek and week', 'being grateful', 'keeping promises' etc. The stress is on the universal principle of respect for autonomy i.e., respect and rationality of persons. As per Kant we have duties to ourselves, as we are rational and autonomous beings. We have a duty not to commit suicide; a duty to develop our talents and a duty to avoid harmful drugs. Kant insisted that moral duties are categorical imperatives. They are commands that we impose on ourselves as well as other rational beings. For example, we should be honest because honesty is required by duty. A businessman is to be honest because honesty pays — in terms of profits from customers and from avoiding jail for dishonesty.

B. On the other hand, the DUTY ethics theory, as enunciated by **John Rawl**, gave importance to the actions that would be voluntarily agreed upon by all persons concerned, assuming impartiality. His view emphasized the autonomy each person exercises in forming agreements with other rational people. Rawl proposed two basic moral principles;

1. each person is entitled to the most extensive amount of liberty compatible with an equal amount for others, and
2. differences in social power and economic benefits are justified only when they are likely to benefit everyone, including members of the most disadvantaged groups.

The first principle is of prime importance and should be satisfied first. Without basic liberties other economic or social benefits cannot be sustained for long. The second principle insists that to allow some people with great wealth and power is justified only when all other groups are benefited. In the business scenario, for example, the free enterprise is permissible so far it provides the capital needed to invest and prosper, thereby making job opportunities to the public and taxes to fund the government spending on the welfare schemes on the poor people.

RIGHT ETHICS

Rights are entitlement to act or to have another individual act in a certain way. Minimally, rights serve as a protective barrier, shielding individuals from unjustified infringement of their moral agency by others. For every right, we have a corresponding duty of noninterference.

A. The RIGHTS approach to ethics has its roots in the 18th century philosopher **Immanuel Kant**, who focused on the individual's right to choose for oneself. According him, what makes human beings different from mere things is, that people have dignity based on their ability to choose freely what they will do with their lives, and they have a fundamental moral right to have these choices respected. People are not objects to be manipulated; it is a violation of human dignity to use people in ways they do not freely choose. Other rights he advocated are:
    1. The right to access the truth: We have a right to be told the truth and to be informed about matters that significantly affect our choices.
    2. The right of privacy: We have the right to do, believe, and say whatever we choose in our personal lives so long as we do not violate the rights of others.
    3. The right not to be injured: We have the right not to be harmed or injured unless we freely and knowingly do something to deserve punishment or we freely and knowingly choose to risk such injuries.
    4. The right to what is agreed: We have a right to what has been promised by those with whom we have freely entered into a contract or agreement.
B. In deciding whether an action is moral or immoral, we must ask, does the action respect the moral rights of everyone? Actions are wrong to the extent that they violate the rights of individuals; the more serious is the violation, the more wrongful is the action. The RIGHTS theory as promoted by **John Locke** states that the actions are right, if they respect human rights of every one affected. He proposed the three basic human rights, namely life, liberty, and property. His views were reflected in the modern American society, when Jefferson declared the basic rights as life, liberty, and pursuit of happiness.
C. As per **A.I. Melden's** theory based on rights, nature mandates that we should not harm others' life, health, liberty or property. Melden allowed welfare rights also for living a decent human life. He highlighted that the rights should be based on the social welfare system.

ETHICAL RELATIVISM

According to this principle, actions are considered morally right when approved by law or custom, and wrong when they violate the laws or customs. The deciding factor is the law or the customs of the society.

A few reasons to accept this are explained in the following paragraphs:

1. Laws appear to be objective ways for judging values. The laws and customs tend to be definite, clear and real, but not always. Further moral reasons allow objective criticism of laws, as being morally lacking.
2. Ethical relativism assumes that the values are subjective at the cultural level. Moral standards also vary from culture to culture. The objectivity is supported by the existing laws of that society. The relative morality accepted, supports the virtue of tolerance of differences among societies. This argument is also not fully acceptable
3. Moral relationism or moral contextualism: According to this, the moral judgments must be made in relation to certain factors, which may vary from case to case. The morally important factors for making judgments include the customs and laws. The virtue ethicists hold that the practical wisdom should prevail upon assessing the facts and in the judgment.

UNIT 3

SAFETY AND RISK

The chief role of the engineer is to ensure safety and wellbeing of society. The engineer has the liability to the society to produce or operate products that are safe. Three categories of consumers-

1. Active consumers: consumers who have control in choosing the item or the manner in which it can be used safely. For example, appliances like washing machine, kitchen mixer etc.
2. Passive consumers: consumers who have less choice and less control over the use like electricity, water etc.
3. Bystanders: who are exposed to danger even without using them, like those living around polluting factories, slums and union carbide factory at Bhopal.

ENGINEERS AND SAFETY

As safety is an essential aspect for engineers. The following five criteria must be met to ensure a safe design. They are:

1. Designs must comply with applicable laws.
2. Acceptable design must meet the standard acceptable practices.
3. Alternative designs that are potentially safe must be explored.
4. The engineer must attempt to foresee any potential misuse of the product by the consumer and must design to avoid their problems.
5. Once the product is designed, prototypes as well as the final product must be rigorously tested not only with reference to the technical specifications but also for safety.

CASE STUDY: THREE MILE ISLAND INCIDENT

Three Mile Island accident, accident in 1979 at the Three Mile Island nuclear power station that was the most serious in the history of the American nuclear power industry. At 4:00 AM on March 28, an automatically operated valve in the Unit 2 reactor mistakenly closed, shutting off the water supply to the main feedwater system. his caused the reactor core to shut down automatically, but a series of equipment and instrument malfunctions, human errors in operating procedures, and mistaken decisions in the ensuing hours led to a serious loss of water coolant from the reactor core. As a result, the core was partially exposed, and the zirconium cladding of its fuel reacted with the surrounding superheated steam to form a large accumulation of hydrogen gas, some of which escaped from the core into the

containment vessel of the reactor building. Very little of this and other radioactive gases actually escaped into the atmosphere, and they did not constitute a threat to the health of the surrounding population. In the following days adequate coolant water circulation in the core was restored. The accident at Three Mile Island, though minuscule in its health consequences, had widespread and profound effects on the American nuclear power industry. It resulted in the immediate (though temporary) closing of seven operating reactors like those at Three Mile Island. A moratorium on the licensing of all new reactors was also temporarily imposed, and the whole process of approval for new plants by the Nuclear Regulatory Commission was significantly slowed for years after the accident. No new reactors were ordered by utility companies in the United States from 1979 through the mid-1980s. The accident increased public fears about the safety of nuclear reactors and strengthened public opposition to the construction of new plants. The unharmed Unit 1 reactor at Three Mile Island did not resume operation until 1985. The cleanup of Unit 2 continued until 1990; damage to the unit was so severe, however (52 percent of the core melted down), that it remained unusable.

CASE STUDY: CHERNOBYL ACCIDENT

Chernobyl, Near Kiev, Russia (April 1986) The RBMK (Acronym for water cooled and graphite moderated) reactors were graphite moderated and they use water tubes. A test on the turbine generator was planned to be conducted during a scheduled plant shut-down maintenance. To conduct the test, the power plant output was reduced to 700 MW. But due to a sudden and unexpected demand, the power output has to be raised.

1. To go ahead with the test, the reactor operators had already disconnected the emergency core-cooling system, ignoring the raise in demand situation.
2. Further, a control device was not properly reprogrammed to maintain power at 700-100 MW level
3. The test was conducted at 200 MW power out-put which is very low for the test. They should have shut down the reactor.
4. The operators blocked all emergency signals and automatic shut-down controls; thus, all safety systems were disconnected.
5. The operators raised control rods to increase power output and tried to continue the test. This made the reactor unsafe. The temperature of RBMK reactor increased and the fission rate increased.
6. The test should have been postponed but continued. The reactor core melted and due to the Hydrogen accumulation, the reactor caught fire and the radioactive waste began to spread out in USSR and also Europe.

COLLEGIALITY

Collegiality is the tendency to support and cooperate with the colleagues. It is a virtue essential for the team work to be affective. This consists of various aspects such as:

1. Respect to the ideas and work of others: This result in support and cooperation with one's colleagues. One gets back the cooperation and support in return, and this is mutually benefited.
2. Commitment to moral principles: Commitment is towards moral decisions, actions, goals of the organizations and the value of the profession.
3. Connectedness: It means the shared commitment and mutual understanding. It ensures the absence of egoism and paves way for progress of both.

LOYALTY

Loyalty is exhibited in two senses, namely

1. **Agency loyalty**
   It is an obligation to fulfil his/her contractual duties to the employer. The duties are specific actions one is assigned, and in general cooperating with others in the organization. It consists of several obligations to employers. But, for the engineers, the paramount obligation is still "The safety, health and welfare of the public".

2. **Attitude loyalty**
   It is concerned with the attitudes, emotions, and a sense of personal identity. It includes willingness to meet moral duties, with attachment, conviction, and trust with employer. The attitude loyalty is more a virtue than an obligation. This type of loyalty is all right when the organizations work for productivity or development of community. Working together in falsification of records or serious harm to the public, does not merit loyalty. Further, with frequent takeovers or merger resulting in large-scale lay-off, employees find it difficult to maintain attitude-loyalty.

Some duties of loyal employees:

- To avoid conflicts of interest
- To protect confidential information
- To be honest in making estimates
- To admit one's errors

COLLECTIVE BARGAINING

It is the bargain by the trade union for improving the economic interests of the worker members. The process includes negotiation, threatening verbally, and declaration of 'strike'. It is impossible to endorse fully the collective bargaining of unions or to condemn. There exist always conflicting views between the professionalism and unionism.

CONFIDENTIALITY

Confidentiality means keeping the information on the employer and clients, as secrets. It is one of the important aspects of team work.

Justification to confidentiality

Confidentiality can be justified by various ethical theories. According to Rights-based theory, rights of the stakeholders, right to the intellectual property of the company are protected by this practice. Based on Duty theory, employees and employers have duty to keep up mutual trust.

1. **Respect for Autonomy**
   It means respecting the freedom and self-determination of individuals and organizations to identify their legitimate control over the personal information of themselves. In the absence of this, they cannot keep their privacy and protect their self-interest.
2. **Respect for promises**
   This means giving respect for the promises made between the employers and the employees. Employees should not disclose the promises given to the employees. This information may be considered as sensitive by the employer. But promises do not establish complete obligations.
3. **Trustworthiness**

Maintaining confidentiality by lawyers, accountants, and attorneys are necessary to develop confidence and welfare of the individuals and the organizations. It does not mean however that these professionals collude with them unethically.

4. **Respect for public welfare**
   This moral consideration is important in identifying relationships in professional transactions, for the benefit of public welfare. An attorney keeping the data on clients confidential, provide safety and welfare of the clients as well as public.

CONFLICT OF INTEREST

Conflict of Interest arises when two conditions are met:
The professional is in a relationship or a role that requires exercising good judgment on behalf of the interests of an employer or client. The professional has some additional or side interest that could threaten.

Types of conflicts of interest

- Actual Conflicts of interest - Purchase Manager
- Potential Conflicts of interest- Become Friend to supplier
- Apparent Conflicts of interest- Design Engineer

AVOIDING CONFLICTS OF INTEREST

- Taking guidance from Company Policy.
- In the absence of such a policy taking a second opinion from a co-worker or manager. This gives an impression that there no intension on the part of the engineer to hide anything.
- In the absence of either of these options, to examine one's own motives and use the ethical problem-solving techniques.
- One can look carefully into the professional codes of ethics which uniformly forbid conflicts of interest. Some of these codes have very explicit statements that can help determine whether or not the situation constitutes conflict of interest.

BOOTLEGGING

Manufacturing, selling or transporting products that are prohibited by law, is called bootlegging. In engineering context, it refers to working on projects which are prohibited or not properly authorized.

WHISTLE BLOWING

Whistle blowing is an act of conveying information about a significant moral problem by a present or former employee, outside approved channels (or against strong pressure) to someone, in a position to take action on the problem.

Types of Whistle Blowing

- External Whistle blowing: The act of passing on information outside the organization.
- Internal Whistle blowing: The act of passing on information to someone within the organization but outside the approved channels. Either type is likely to be considered as disloyalty, but the second one is often seen as less serious than the latter. From corporations' point of view both are serious because it leads to distrust, disharmony, and inability of the employees to work together.
- Open Whistle blowing: Individuals openly revealing their identity as they convey the information.

- Anonymous Whistle blowing: Individual conveying the information conceals his/her identity.

Conditions to be satisfied before whistle blowing

Richard T. De George suggests the following:

- The harm that will be done by the product to the public is serious and considerable.
- The individual makes his/her concern known to his/her superiors.
- If one does not get any proper response from immediate superiors, then one should exhaust the channels that are available within the organization including the board of directors.
- One must have documented evidence that would convince a reasonable and impartial observer that one's view of the situation is correct and the company policy is wrong.
- There must be strong evidence that making the information public will in fact prevent the threatened serious harm.

PATENT

Patent is a contract between the individual (inventor) and the society (all others). Patents protect legally the specific products from being manufactured or sold by others, without permission of the patent holder. Patent holder has the legally-protected monopoly power as one's own property.

Patent is given to a product or a process, provided it is entirely new, involving an inventive method and suitable for industrial application. While applying for a patent, it is essential to submit the documents in detail regarding the problem addressed, its solution, extent of novelty or innovation, typical applications, particulars of the inventor, and the resources utilized. Inventions are patentable and the discoveries are not.

Salient features of patent act 2002:

1. **Patent outside India:** Applications for patent outside India, on inventions for defense purposes or related to atomic energy are prohibited. For other patents, an inventor should apply for a patent within India and then seek clearance for filing patents abroad.
2. **Licensing:** The controller of patents grants the license upon verification and on some terms and conditions. The controller shall endeavor to secure that the articles manufactured under the patent shall be available to the public at the lowest price consistent with patentees deriving a reasonable gain from their patent rights.
3. **Negative Rights:** The grant of patent for an invention does not guarantee the merit or any other commercial value of the invention disclosed. The state which grants the patent does not also guarantee the validity of the patent granted. If other regulations do not permit, even the patent holder cannot commence manufacturing. In this context, it is a negative right.
4. **First to file rule:** Indian like many other countries follows the system of first to file or first to register system to determine priority. Accordingly, a patent or invention which is filed or registered first in the patent office will have precedence to the patent or invention, which is filed later in the date, even if it had been invented earlier.
5. **Burden of proof of infringement:** Legal rights of patent can not be enforced automatically. In any suit for infringement of a patent, the patentee must move the court. The court may direct the defendant to prove that the process used by him to obtain the product, identical to the product of the patented process, is different from the patented process.

Types of patents:

Utility patent

Industrial Design patent

COPYRIGHT

The copyright is a specific and exclusive right, describing rights given to creators for their literary and artistic works. This protects literary material, aesthetic material, music, film, sound recording,

broadcasting, software, multimedia, paintings, sculptures, etc. There is no need for registration and no need to seek lawyer's help for settlement. The life of the copyright protection is the life of the inventor or author plus 50 years. Copyright gives protection to particular expression and not for the idea.
Copyright is effective in

a) preventing others from copying or reproducing or storing the work,
b) publishing and selling the copies
c) performing the work in public, commercially
d) to make film
e) to make translation of the work
f) to make any adaptation of the work.

Copying the idea is called 'plagiarism' and it is dealt with separately.

TRADEMARK

Trademark is a wide identity of specific good and services, permitting differences to be made among different trades. It is a territorial right, which needs registration. Registration is valid initially for 10 years, and renewable. The trademark or service mark may be registered in the form of a device, a heading, a label, a letter, logos, designs, sounds, and symbols.
There are three functions of trademark:

1. Just as we are identified by our names, good are identified by their trademarks.
2. The trademark carries with it an inherent indication or impression on the quality of goods, which indirectly demonstrates that it receives the customer's satisfaction.
3. The trademark serves as silent sales promoter. Without a trademark, there can be no advertisement. In other words, it serves as a medium for advertising the goods.

UNIT 5

GLOBALISATION

Globalization means integration of countries through commerce, transfer of technology, and exchange of information and culture. In a way, it includes acting together and interacting economies through trade, investment, loan, development schemes and capital across countries. In a different sense, these flows include knowledge, science, technology, skills, culture, information, and entertainment, besides direct human resource, tele-work, and outsourcing.
This interdependence has increased the complex tensions and ruptures among the nations. For the engineers, the issues such as multinational organizations, computer, internet functions, military development and environmental ethics have assumed greater importance for their very sustenance and progress.

MULTINATIONAL CORPORATIONS

Organizations who have established business in more than one country, are called multinational corporation. The headquarters are in the home country and the business is extended in many host countries. The Western organizations doing business in the less-economically developed (developing, and overpopulated) countries gain the advantage of inexpensive labor, availability of natural resources, conducive-tax atmosphere, and virgin market for the products. At the same time, the developing countries are also benefited by fresh job opportunities, jobs with higher remuneration and challenges, transfer of technology, and several social benefits by the wealth developed. But this happens invariably

with some social and cultural disturbance. Loss of jobs for the home country, and loss or exploitation of natural resources, political instability for the host countries are some of the threats of globalization.

MNCs AND MORALITY

The economic and environmental conditions of the home and host countries may vary. But the multinational institutions have to adopt
appropriate measures not to disturb or dislocate the social and living conditions and cultures of the home countries. A few principles
are enlisted here:

1. MNC should respect the basic human rights of the people of the host countries.
2. The activities of the MNC should give economic and transfer technical benefits, and implement welfare measures of the workers of the host countries.
3. The business practices of multinational organizations should improve and promote morally justified institutions in the host countries.
4. The multinationals must respect the laws and political set up, besides cultures and promote the cultures of the host countries.
5. The multinational organizations should provide fair remuneration to the employees of the host countries. If the remuneration is high as that of the home country, this may create tensions and if it is too low it will lead to exploitation.
6. Multinational institutions should provide the necessary safety for the workers when they are engaged in hazardous activities and 'Informed consent' should be obtained from them. Adequate compensation should be paid to them for the additional risks undertaken.

PROs AND CONs OF MNCs

Cons

1. Mixing of the foreign nationals with locals, may attract and influence the people, especially the young, towards the free exchange of ideas and more freedom for women etc., sometimes leading to declining of culture or discipline.
2. Economic disparity between those employed by MNC and those employed by locals, might lead to social conflicts.

Pros

1. The MNC might spend money on projects for the social development of people, and eradicate health and safety problems.
2. Increased employment opportunities for the people will reduce ethical conflicts/ problems.

CASE STUDY: BHOPAL GAS TRAGEDY

The Bhopal gas tragedy was one of the world's worst industrial disasters that occurred on December 2-3, 1984, in Bhopal, India. It was caused by the release of around 40 tons of toxic methyl isocyanate gas from a pesticide plant owned by Union Carbide India Limited (UCIL). The incident caused immediate deaths of over 3,000 people and exposed over 500,000 to the gas, leading to long-term health problems for many.

The disaster was caused by a combination of design flaws, maintenance issues, and inadequate safety measures. The plant's operators failed to follow proper safety protocols, and the company neglected to implement adequate safety measures and emergency response plans.

In the aftermath of the tragedy, there was widespread criticism of Union Carbide and the Indian government's response to the disaster. Union Carbide paid a $470 million settlement to the Indian government in 1989, but many critics argue that this amount was not sufficient to cover the full extent of the damage caused.

The Bhopal gas tragedy highlighted the need for stronger regulations and safety measures in the chemical industry and raised important ethical questions about the responsibilities of corporations and governments to protect human life and the environment.