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## MODULE: 5

## GLOBAL ETHICS ISSUES

**Multinational Corporations- Environmental Ethics- Business Ethics- Computer Ethics -Role in Technological Development- Engineers as Managers- Consulting Engineers- Engineers as Expert witnesses and advisors-Moral leadership.**

**Define Globalization.(3)**

## GLOBALIZATION

***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.***

Globalization usually benefits the company and the home country by becoming more competitive in world trade. Globalization offers many advantages for the developing counties in the way of foreign investment, new increased employment opportunities for their citizens, opportunities for skill development, transfer of new advanced technology and management skills and many other social benefits due to the improvement in their economy.

On the other hand it has many negative effects. It badly affects the job security and employment generation in the home country. In globalisation there is a possibility of protecting the economic interests of the home country than the host country and exploiting natural resources and labour. Many occasions the affects the cultural diversity of the host country. Thus globalization poses many questions related to

many issues connected with expanding operations to other countries. Some of them are as follows:

- ***Whether globalization causes for job loss in the home country?***
- ***Whether it causes for the exploitation of resources in the host country?***
- ***Whether it causes for the exploitation of labour in the host country?***
- ***How the cultural diversities are addressed?***
- ***What will be after effect of mixing of different cultures?***

## GLOBALIZATION OF ENGINEERING

As more and more companies expand their operations in an international manner, the engineer's professional life may come across with many physical, cultural and political environments those belong to different countries.International trade agreements and consideration towards international laws governing human rights and environmental issues make the decision making process very complicate with regard to personal and professional life. Such considerations raise new moral and ethical questions that are relevant to engineers with regard to their profession. As professionals, engineers are bound to follow some ethical codes so as to comply with their obligations towards the wellbeing of the society and people where they work.

## GLOBALIZATION & ENGINEERING EDUCATION

As part of this phenomena, engineering also became global. The first step in the globalization of engineering is establishing universal criteria for engineering education .There are many accords in the world with regard to engineering education. India is a member country in the Washington Accord. It is an agreement among bodies that have the authority to accredit engineering programs in their respective countries or jurisdictions? The primary purpose of the accord is to establish substantial agreement among the signatory countries or jurisdictions are able to accept the qualifications of engineers graduating from accredited institutions in other signatory countries or jurisdictions as equivalent. The engineers in the accredited jurisdictions are expected not only to meet minimal technical standards in their education but also to abide some code of conduct.

## ENGINEERS AS PROFESSIONALS

Generally, engineers are considered as professionals. As professionals they are bound to follow some ethical codes that guide themselves so as to comply with their responsibilities towards the wellbeing of the people and the sustainability of the environment. There are several accredited associations for engineers such as National Society of Professional Engineers (NSPE), Commonwealth Engineers Council (CEC) The World Federation of Engineering Organizations (WFEO).All these organizations promote ethics and professional conduct and endorses the obligation of engineers to promote health, safety and welfare of the public.Asprofessionals, engineers are bound to abide the code of professional ethics applicable internationally and nationally related to multiple nations with regard to their functional area. Hence the awareness and compliance of these diverging ethical conditions are very important for their sustenance and progress of multinational corporations.

**Define Multinational Companies.(3)**

## MULTINATIONAL CORPORATIONS

Organisations 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 labour, 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.

A multinational corporation is known by various names such as: global enterprise, international enterprise, world enterprise, transnational corporation etc.

**Some popular examples of multinationals are given below**

| FOREIGNMULTINATIONAL | INDIAN AFFILIATE /SUBSIDIARY |
|---|---|
| Bata Corporation | Bata India |
| Cadbury | Cadbury India |
| Coca-Cola Corporation | Coca Cola India |
| Unilever | Hindustan Lever |
| Timex | Timex Watches |
| Colgate Palmolive | Colgate India |
| Pepsi Corporation | Pepsi India |
| Philips | Philips India |
| Sony Corporation | Sony India |
| Suzuki | Maruti Suzuki |
| GEC | GEC Alsthom |
| ABB | ABB India |

**Enumerate the features of multinational corporations.(8)**

**Features of Multinational Corporations (MNCs)**

Following are the salient features of MNCs:

**(i) Huge Assets andTurnover:**Because of operations on a global basis, MNCs have huge physical and financial assets. This also results in huge turnover (sales) of MNCs. In fact, in terms of assets and turnover, many MNCs are bigger than national economies of several countries.

**(ii)InternationalOperationsthroughaNetworkofBranches:**MNCs have production and marketing operations in several countries; operating through a network of branches, subsidiaries and affiliates in host countries.

**(iii)UnityofControl:**MNCsarecharacterizedbyunityofcontrol.MNCscontrolbusinessactivitiesoftheir branches in foreign countries through head office located in the home country. Managements of branches operate within the policy framework of the parent corporation.

(iv)Mighty EconomicPower:MNCsare powerful

economicentities.Theykeeponaddingtotheireconomicpower through constant mergers and acquisitions of companies, in hostcountries.

**(v)Advanced and Sophisticated Technology:** Generally, a MNC has at its command advanced and sophisticated technology. It employs capital intensive technology in manufacturing and marketing.

(vi)ProfessionalManagement: A MNC employs professionally trained managers to handle huge funds, advanced technology and international business operations.

**(vii)Aggressive Advertising andMarketing:**MNCs spend huge sums of money on advertising and marketing to secure international business. This is, perhaps, the biggest strategy of success of MNCs. Because of this strategy, they are able to sell whatever products/services, they produce/generate.

**(viii)Better Quality of Products:**A MNC has to compete on the world level. It, therefore, has to pay special attention to the quality of its products.

## Describe the merits & demerits of MNCS from the view point of host country.(14)

### ADVANTAGES &LIMITATIONS OF MNCS

### Advantages of MNCs from the Viewpoint of Host Country

We propose to examine the advantages and limitations of MNCs from the viewpoint of the host country. In fact, advantages of MNCs make for the case in favour of MNCs; while limitations of MNCs become the case against MNCs.

(i) **EmploymentGeneration:**MNCs create large scale employment opportunities in host countries. This is a big advantage of MNCs for countries; where there is a lot of unemployment.

(ii) **Automatic Inflow of ForeignCapital**:MNCs bring in much needed capital for the rapid development of developing countries. In fact, with the entry of MNCs, inflow of foreign capital is automatic. As aresultoftheentryofMNCs,Indiae.g.hasattractedforeigninvestmentwithseveral milliondollars.

(iii) **Proper Use of IdleResources:** Because of their advanced technical

knowledge, MNCs are in a position to properly utilize idle physical and human resources of the host country. This results in an increase in the National Income of the host country.

(iv) **ImprovementinBalanceofPaymentPosition:**MNCs help the host countries to increase their exports. As such, they help the host country to improve upon its Balance of Payment position.

(v)**.TechnicalDevelopment:** MNCs carry the advantages of technical development 10 host countries. In fact, MNCs are a vehicle for transference of technical development from one country to another. Because of MNCs poor host countries also begin to develop technically.

**(vi) ManagerialDevelopment:** MNCs employ latest management techniques. People employed by MNCs do a lot ofresearchinmanagement.Inaway,theyhelptoprofessionalizemanagemental ong latest lines of management theory and practice. This leads to managerial development in hostcountries.

**(vii) End of LocalMonopolies:** The entry of MNCs leads to competition in the host countries. Local monopolies of host countries either start improving their products or reduce their prices. Thus MNCs put an end to exploitative practices of local monopolists. As a matter of fact, MNCs compel domestic companies to improve their efficiency and quality. InIndia,manyIndiancompaniesacquiredISO-9000qualitycertificates,duetofear of competition posed byMNCs.

**(viii) Improvement in Standard ofLiving:** By providing super quality products and services, MNCs help to improve the standard of living of people of host countries.

(x)**Promotionofinternationalbrotherhoodandculture:**MNCs integrate economies of various nations with the world economy. Through their international dealings, MNCs promote international brotherhood and culture; and pave way for world peace and prosperity.

## Limitations of MNCs from the Viewpoint of Host Country

**(i)Danger for DomesticIndustries:**MNCs, because of their vast economic power, pose a danger to domestic industries; which are still in the process of development. Domestic industries cannot face challenges posed by MNCs. Many domestic industries have to wind up, as a result of threat from MNCs. Thus MNCs give a setback to the economic growth of host countries.

**(ii)Repatriation ofProfits:(Repatriation of profits means sending profits to their country):**MNCs earn huge profits. Repatriation of profits by MNCs adversely affects the foreign exchange reserves of the host country; which means that a large amount of foreign exchange goes out of the host country.

**(iii)No Benefit to PoorPeople:**MNCs produce only those things, which are used by the rich. Therefore, poor people of host countries do not get, generally, any benefit, out of MNCs.

**(iv)Danger to Independence:** Initially MNCs help the Government of the host country, in a number of ways; and then gradually start interfering in the political affairs of the host country. There is, then, an implicit danger to the independence of the host country, in the long-run.

**(v)DisregardoftheNationalInterestsoftheHostCountry**:MNCs invest in most profitable sectors; and disregard the national goals and priorities of the host country. They do not care for the development of backward regions; and never care to solve chronic problems of the host country like unemployment and poverty.

**(vi)Misuse of MightyStatus:**MNCsarepowerfuleconomicentities.Theycanaffordt obearlossesforalongwhile, in the hope of earning huge profits-once they have ended local competitionand achieved monopoly. This may be the dirty strategy of MNCs to wipe off local competitors from the host country.

**(vi)Careless Exploitation of NaturalResources:**MNCs tend to use the natural resources of the host country carelessly. They cause

rapid depletion of some of the non-renewable natural resources of the host country. In this way, MNCs cause a permanent damage to the economic development of the host country.

**(vii)Selfish Promotion of AlienCulture:** NCstendtopromotealienculture inhostcountrytosell theirproducts.Th eymake people forget about their own cultural heritage. In India, e.g. MNCs have created a taste for synthetic food, soft drinks etc. This promotion of foreign culture by MNCs is injurious to the health of peoplealso.

**(viii)ExploitationofPeople,inaSystematicManner:** MNCs join hands with big business houses of host country and emerge as powerful monopolies. This leads to concentration of economic power only in a few hands. Gradually these monopolies make it their birth right to exploit poor people and enrich themselves at the cost of the poor working class.

## MULTINATIONAL CORPORATIONS IN INDIA

MNCs have been operating in India even prior to Independence, like Singer, Parry, Philips, Unit- Lever, Proctor and Gamble. They either operated in the form of subsidiaries or entered into collaboration with Indian companies involving sale of technology as well as use of foreign brand names for the final products. The entry of MNCs in India was controlled by existing industrial policy statements, MRTPAct,andFERA.Inthepre-reformperiodtheoperationsof MNCsinIndiawererestricted.

### New Industrial Policy 1991 and Multinational Corporations

The New Industrial Policy 1991, removed the restrictions of entry to MNCs through various concessions. The amendment of FERA in 1993 provided further concession to MNCs in India.

**At present MNCs in India can—**

(i) Increase foreign equity up to 51 percent by remittances in foreign exchange in specified high priority areas. Subsequently MNCs are free to

own a majority share in equity in mostproducts.

(ii) BorrowmoneyoracceptdepositwithoutthepermissionofReserveBankofIndi a.

(iii) Transfer shares from one non-resident to anothernon-resident.

(iv) Disinvest equity at market rates on stockexchanges.

(v) Go for 100 percent foreign equity through the automatic route in Specified sectors.

(vi) Deal in immovable properties inIndia.

(vii) Carry on in India any activity of trading, commercial or industrial except a very small negativelist.

Thus, MNCs have been placed at par with Indian Companies and would not be subjected to any special restrictions under FERA.

## CRITICISMS AGAINST MNCS IN INDIA

The operations of MNCs in India have been opposed on the followinggrounds:

(i) They are interested more on mergers and acquisitions and not on freshprojects.

(ii) They have raised very large part of their financial resources from within the country.

(iii) They supply second hand plant and machinery declared obsolete in their country.

(i v) They are mainly profit oriented and have short term focus on quick profits. National interests and problems are generally ignored.

(v) They use expatriate management and personnel rather than competitive Indian Management.

(vi) Though they collect most of the capital from within the country, they have repatriated huge profits to their mothercountry.

(vii) They make no effort to adopt an appropriate technology suitable to the needs. Moreover, transfer of technology proves verycostly.

(viii) Once an MNC gains foothold in a venture, it tries to increase its holding in order to become a majorityshareholder.

(ix) Further,oncefinancialliberalizationsareinplaceandfreemovementisallowed, MNCs can destabilize theeconomy.

(x) They prefer to participate in the production of mass consumption and non- essentialitems.

## INTERNATIONAL HUMAN RIGHTS

To know what are the moral responsibilities and obligations of the multinational corporations operating in the host countries, let us discuss with the framework of rights ethics. Common minimal rights are to be followed to smoothen the transactions when the engineers and employers of MNCs have to interact at official, social, economic and sometimes political levels. At international level, the organizations are expected to adopt the minimum levels of

- (a) values, such as mutual support, loyalty, and reciprocity,
- (*b*) the negative duty of refraining from harmful actions such as violence and fraud, and
- (*c*) basic fairness and practical justice in case of conflicts.

The ten international rights to be taken care of, in this context are:

- 1. Right of freedom of physical movement of people
- 2. Right of ownership of properties
- 3. Freedom from torture
- 4. Right to fair trial on the products
- 5. Freedom from discrimination on the basis of race or sex. If such discrimination against women or minorities is prevalent in the host country, the MNC will be compelled to accept. MNCs may opt to quit that country if the human rights violations are severe.
- 6. Physical security. Use of safety gadgets have to be supplied to the workers even if the laws of the host country do not suggest such measures.
- 7. Freedom of speech and forming association
- 8. Right to have a minimum education
- 9. Right to political participation

- 10. Right to live and exist (i.e., coexistence). The individual liberty and sanctity of the human life are to be respected by all societies.

**Evaluate the technology transfer & appropriate technology. (8)**

## TECHNOLOGY TRANSFER

It is a process of moving technology to a new setting and implementing it there. Technology includes hardware (machines and installations) and the techniques (technical, organizational, and managerial skills and procedures). It may mean moving the technology applications from laboratory to the field/factory or from one country to another. This transfer is effected by governments, organizations, universities, and MNCs. Thus there happens a transfer or movement of technology and associated skills from one country to another that finally improves the development process of the host country.

For example, when a developing country permits a foreign country to manufacture a particular model of aircraft to host country, the MOU between the countries provides for the technology transfer after a particular period or certain number of production units into the host country. Here the parent company trains the local people to handle the technology and associate them in production process. After the specified period the parent company transfers the technology (both machines and installations and the operating and managing skills) to the host country. Thereafter the host company can be able to produce that model of aircraft freely.

## USE OF APPROPRIATE TECHNOLOGY

The MNCs are expected to identify,transfer, and implement the appropriate technology matching to the new situations .Technology includes both hardware and software that includes technical, organizational and managerial skills and procedures. Many factors like economic, social and engineering have determinant role in choosing and implementing appropriate technology. Availability and nature of resources, physical conditions, capital opportunity costs and the human value system that includes traditions, beliefs, religion, also influence the decision about the right kind of technology.

For example, the interest of small farmers in our country with regard to use of power tillers rather than high-powered tractors or sophisticated harvesting machines and the social security job conditions are to be considered while thinking about importing a new technology for the appropriateness. The term appropriate is value based and it should ensure fulfilment of the human needs and protection of the environment.

## RESPECTING CULTURAL DIFFERNECES & CULTURAL RELATIVISM

One of the toughest area of ethical concern is the accommodation of different cultures with the business domain. Every time an MNC expands its operation to a host country it has to address a new culture that is different from home country. Then the question is whether the company follows the adage "When in Rome, do as the Romans". Different cultures have different moral norms and practices. The actions of corporation and individuals that are accepted by law, custom and other values of a society can be morally right in that society. But it may not be acceptable to another society by custom, values, and even law. This situation is known as Cultural Relativism.

When multinational companies assume that their moral values depend on the culture in which they operate, they practice ethical relativism. Ethical relativisms means morality is relative. That is, these companies apply different ethical and moral standards according to the physical locations of their operations .It means the corporation and the engineers functioning inn other countries must understand their law ,customs and beliefs and act in line with those prevailing in that country.

If the organizations practice laws of the home country, without any changes or adjustments to the host country it referred to ethical absolutism.This style is also problematic irrespective of the goodness is something relational. Hence, the way out for MNCs to overcome the situation is to follow ethical rationalism that matches with the context, as a compromise.Every moral judgement has to be made in relation to the prevailing factors locally,without sticking on rigid

rules.Then the moral decisions will, be realistic, matching with the context, culture and customs of other countries.

## Explain the tree guide lines that business person should follow while doing business in other countries?(6)

**The three guide lines that keep you on the right path when doing business in other countries**

**1. Adhere to Universal moral standards:** The first obligation of any multinational company is to follow universal moral standards.Although the culture of people of different places differ in determiningwhat constitutes for right and wrong, there are some universal moral views those are shared in common. For example committing murder without substantial reason is considered as wrong everywhere .But all societies consider that killing another person without substantial reason or committing a rape or bribery is a crime and prohibits such acts through laws. Moral standards include prohibitions against stealing, obligations to care for children and the elderly, avoidance of exploitation of natural resources etc.

**2. Keep trust and honesty as basic principles:**MNCs should comply with certain level of trust and honesty. Trust is an essential ingredient for any business enterprise to survive in a long term basis. In any transaction whether it is providing goods or services as suppliers or purchasing materials as manufacturers or paying the employees, enterprises should keep trust worthy dealings. The employers should provide fair pay, safety measures to the employees and develop trust among the employees towards the organization. We can nurture trust through honest dealings as honesty acts as moral currency of business.

**3. Value Human Rights:** Multinational business should respect human liberties. So ethical companies take the responsibility to defend and promote human rights of the people in the home country as well as the host countries.

Thus the task of multinational businesses is to address and respect the cultural differences of people and nations and adhering to the universal ethical norms.

The absence of an effective monitoring system may lead to unethical practices,moral breaches form the side of business enterprises.

**Define Environmental ethics.(3)**

## ENVIRONMENTAL ETHICS

There exists a direct co-relation between the living organisms and the surrounding environment. The dynamic survival of all living organisms including man, is much dependent on the environmental factors such as composition (if atmospheric air, temperature, light and soil texture. When these ecological factors are influenced by an external agent such as air or water or soil pollution, the **ecological imbalance** appears. This in turn, drastically alters and affects human population and other living organisms in the biosphere. These factors form the fundamental basis for the introduction and implementation of a modern concept called **"environmental ethics".**

Environmental Ethics deal with issues related to the rights of individuals that are fundamentaltolifeandwell-being. Theseconcernnotonlytheneedsofeachperson today, but also those who will come after us. It also deals with the rights of others living creatures that inhabit theEarth.Globalization and industrialization have impacted the environment on a very large scale.Thelongtermeffectsoftheenvironmentareusuallyneglectedunlessitisgross and immediateeffect.We are getting habituated to the ill-effects of pollution and industrial negligence shows on our environment. The aftermath can be seen in acid rains, water and land contamination, effect on crops and food sources, the cattle getting affected, the dryingoflakesandcanals,floods,drought,tsunamisandearthquakesduetodrilling of underground wealth, the effect on marine being, the effect on ozone and the melting of snow mountains due to global warming, etc. The aftermath can be an alarming call for the required environmentalchanges.

## ENGINEERS &ENVIRONMNETAL ETHICS

Engineers must develop the positive attitude to have the mental orientation and assessment about their ethical obligations that they are presumed to fulfil in

contributing their best efforts to keep the environment clean. While taking up any challenging careers, engineers should evaluate to what extent their professional assignments would directly interfere with and harm the surrounding environment. They must have the insights in designing and formulating their productive plans which will not either crucially led to the environmental degradation or deterioration.Engineersneedtoshowsomeresponsibilitytowardstheenvironmentandsho uldbe ethical in their approach and find mitigating solutions for the protection of environment. Hence engineers in the past were not bothered about the degradation of environment, in their activities .Presently most of the activities associated with engineering are governed by several legislations related to environmental considerations.Now engineers are bound to follow many code of conducts, eco-friendly tools, machines processes and projects which ensures environmental diversity.These include measures such as

**1.Ensure protection of environment**

**2. Prevent the degradation of environment**

**3.Slowdown the exploitation of the natural resources, so that future generations can also survive in this planet.**

The American Society of Civil Engineers (ASCE) code of ethics has specifically requires that engineers shall hold paramount the safety ,health and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of professional duties .The term sustainable development emphasizes on the investment ,orientation of technology ,development and functioning of organizations without denying the present needs of people and ensuring for the future generations also to meet their needs.

**Engineers, by virtue of their responsibility as professionals, are expected to follow some ethical principles irrespective of whether there are legal obligations or not**

1**. Impact assessment on environment and human wealth:** One of the major effect of technology is the creation of wastage that results in pollution of land, water, air and even space. Detailed study is necessary to assess the extent of negative impacts of implementing new technology on environment and human health.

2**. Establish standards/acceptable level pollution:** Study and to fix the tolerable and actual pollution levels.In some cases such ashazardous pollutants the recommended approach is to access the cost benefit in deciding the permissible level of pollution .But CBA (Cost Benefit Analysis) should be based on maximizing human well-being. But in some other cases cost is not relevant in fixing the level of pollution such as water pollution. The resource Conservation and Recovery Act of USA requires that standards regulating hazardous waste be based solely on the protection of public health and the environment.

3**.Countermeasures:** Engineers should study on the available alternatives to reduce/eliminate the bad effects of technology or the measures to protect from the bad effects.

**4.Environmnetalawareness:**Many of the problems associated with technology and engineering can be avoided /reduced by taking precautions .Proper steps to educate people on the environmental issues ,practices and remedies can solve the problems effectively.

Organizationsshouldsupporttheactivitiesthatpromoteenvironment protection. The **environment ethics** include −

- The study of moral issues concerning theenvironment
- Moral perspectives, beliefs and attitudes concerning thoseissues.

## Ethical Guidelines to Work with Earth

Variousethicistsandphilosophersproposedthefollowingethicalguidelinestowork with the earth (Miller1996).

## Ecosphere andEcosystems

1. Weshouldnotdepleteordegradetheearth'sphysical,chemicalorbiologicalcapital, which supports all life and all human economic activities.
2. We should try to understand and cooperate with rest of thenature.
3. We should work with rest of the nature to sustain the ecologicalintegrity, biodiversity and adaptability of the earth's life support systems.
4. Whenwemustalternaturetomeetourneedsorwants,weshouldchoosemethods that do the least possible harm to us and other livingthings.

5. Beforewealternature, weshouldcarryoutanEnvironmentalImpactAssessment to evaluate proposed actions and discover how to inflict the minimum short – and long-term environmentalharm.

**Species and Cultures**

1. Everyspecieshasarighttoliveoratleaststruggletolive.Simplybecauseitexists.
2. Weshouldworktopreserveasmuchoftheearth'sgeneticvarietyaspossible because it is the raw material for all future evolution.
3. We have the right to defend ourselves against individuals of species that do us harm and to use individuals of species to meet our vital needs but we should strive not to cause premature extinction of any wildspecies.
4. The best way to protect species and individuals of species is to protect the ecosystem in which they live and to help restore those we havedegraded.
5. No human culture should become extinct because of ouractions.

**Individual Responsibility:**

1. Weshouldnotinflictunnecessarysufferingorpainonanyanimalweraiseorhunt for food or use for scientific or otherpurposes.
2. We should use no more of the earth's resources than we need and not wastesuchresources.
3. We should leave the earth as good as—or better—than we foundit.
4. We should work with the earth to help heal ecological wounds we haveinflicted.

**Explain human centered Environmental ethics with**

**nature centered ethics?(8)**

**Conclude the features of Ecocentric & Biocentric ethics. (6)**

## TWO WORLD VIEWS ON ENVIRONMENTAL ETHICS

### (a) Anthropocentric Worldview:

This view is guiding most industrial societies. It puts human beings in the center giving them the highest status. Man is considered to be most capable for managing the planet earth.

The guiding principles of this view are:

1. Man is the planet's most important species and is in the in- charge of the rest of thenature.
2. Earth has an unlimited supply of resources and it all belongs tous.
3. Economic growth is very good and more the growth, the better it is, because it raises our quality of life and the potential for economic growth isunlimited.
4. A healthy environment depends upon a healthyeconomy.
5. The success of mankind depends upon how good managers we are for deriving benefits for us fromnature.

**(b) Eco-centricWorldview:**

This is based on earth-wisdom. The basic beliefs are as follows:

1. Nature exists not for human beings alone, but for all thespecies.
2. The earth resources are limited and they do not belong only to humanbeings.
3. Economic growth is good till it encourages earth-sustaining development and discourages earth-degradingdevelopment.
4. A healthy economy depends upon a healthyenvironment.
5. Thesuccessofmankinddependsuponhowbestwecancooperatewiththerest of the nature while trying to use the resources of nature for ourbenefit.

**Explain the major environmental issues faced by the**

**world? (14)**

## ENVIRONMENTAL ISSUES

- **1. ACID RAIN:** In most of the countries across the world, acid rain has become the serious environmental problem due to intensive advancements in industrializations. The continuous burning of fossil fuels such as petroleum products (automobile exhaust) are identified as the maximum contributors as the causative agents for acid rain. The above-said factors continuously release abundant concentrations of nitrogen and sulphur oxides ($NO_2$ and $SO_2$) into the atmosphere. These oxides react with moisture to form sulphuric acid and nitric acid ($HNO_3$ and H2SO4). These acids, when descending down to earth along with rain water, produce corrosive reactions on animals, green plants and all dwelling buildings.

**2. PRESENCE OF ASBESTOS IN ATMOSPHERIC AIR AND DRINKING WATER:** In 1955, an ore processing mining company commenced its huge plant to produce an iron ore called taconite at Silver Bay, Minnesota, USA. The nearby, Lake Superior was heavily polluted with taconite contamination, due to the continuous discharge of the effluent from the plant. The taconite contamination eventually led to the drastic depletion of $O_2$ in that aquatic system and had further resulted in the massive killing of fishes. Moreover, asbestos-like fibers were found to have heavily infiltrated into the drinking-water supplies from Lake Superior, thus causing serious water contamination. The Federal government of Minnesota State filed legal dispute in the court of law and the Reserves taconite plant was finally directed to shift over to another disposed land site.

**3. PLASTIC WASTE DISPOSAL:**In our country, several crores of plastic bottles are used as containers for water and oil, and plastic bags are used to pack different materials ranging from vegetables to gold ornaments. Hardly any of these are recycled. They end up in gutters, roadsides, and agricultural fields. In all these destinations, they created havoc. The worse still is the burning of plastic materials in streets and camphor along with plastic cover in temples, since they release toxic

fumes and threaten seriously the air quality. Cities and local administration have to act on this, collect and arrange for recycling through industries.

- **4.e-WASTE DISPOSAL:** The parts of computers and electronic devices which have served its useful life present a major environmental issue for all the developing countries including India. This scrap contains highly toxic elements such as lead, cadmium, and mercury. Even the radioactive waste will lose 89% of its toxicity after 200 years, by which time it will be no more toxic than some natural minerals in the ground. It will lose 99% of its remaining toxicity over the next 30,000 years. The toxic chemical agents such as mercury, arsenic, and cadmium retain toxicity undiminished for ever. But these scraps are illegally imported by unscrupulous agencies to salvage some commercially valuable inputs. Instead of spending and managing on the scrap, unethical organizations sell them to countries such as India. This is strictly in violation of the Basel Convention of the United Nations Environment Program, which has banned the movement of hazardous waste.

- A recent report of the British Environment Agency, has revealed that the discarded computers, television sets, refrigerators, mobile phones, and electrical equipments have been dispatched to India and Pakistan in large quantity, for ultimate disposal in environmentally-unacceptable ways and at great risk to the health of the labour. Even in the West, the electronic junk has been posing problems.

- Strong regulation including

- (*a*)pressure on industries to set up disassembling facilities,

- (*b*) ban on disposal in landfill sites,

- (*c*) legislation for recycling requirements for these junk and

- (*d*) policy incentives for eco-friendly design are essential for our country. The European Union through the Waste Electrical and Electronic Equipment (WEEE) directive has curbed the e-waste dumping by member countries and

require manufacturers to implement methods to recover and recycle the components.

- **5.INDUSTRIAL WASTE DISPOSAL:**There has been a lot of complaints through the media, on

- (*a*) against the Sterlite Copper Smelting Plant in Thuthukkudi (1997) against its pollution, and

- (*b*) when Indian companies imported the discarded French Warship Clemenceau for disposal, the poisonous *asbestos* compounds were expected to pollute the atmosphere besides exposing the labour to a great risk, during the disposal. The government did not act immediately. Fortunately for Indians, the French Government intervened and withdrew the ship, and the serious threat was averted.

- **6.GLOBAL WARMING:**Over the past 30 years, the Earth has warmed by 0.6 °C. Over the last 100 years, it has warmed by 0.8 °C. It is likely to push up temperature by 3° C by 2100, according to NASA's studies. The U.S. administration has accepted the reality of global climate change, which has been associated with stronger hurricanes, severe droughts, intense heat waves and the melting of polar ice. Greenhouse gases, notably carbon dioxide emitted by motor vehicles and coal-fired power plants, trap heat like the glass walls of a greenhouse, cause the Earth to warm up. Delegates from the six countries — Australia, China, India, Japan, South Korea and US met in California in April 2006 for the first working session of the Asia- Pacific Partnership on Clean Development and Climate. These six countries account for about half of the world's emissions of climate-heating greenhouse gases.

- Only one of the six, Japan, is committed to reducing greenhouse gas emissions by at least 5.2 per cent below 1990 levels by 2012 under the Kyoto Agreement. About 190 nations met in Germany in the middle of May 2006 and tried to bridge vast policy gaps between the United States and its main allies over how to combat climate change amid growing evidence that the world is warming

that could wreak havoc by stoking more droughts, heat waves, floods, more powerful storms and raise global sea levels by almost a meter by 2100.

- **7.DEPLETION OF OZONE LAYER:** The *ozone* layer protects the entire planet from the ill-effects of ultraviolet radiation and is vital for all living organisms in this world. But it is eaten away by the Chloro-fluro-carbons (CFC) such as *Freon* emanating from the refrigerators, air conditioners, and aerosol can spray. This has caused also skin cancer to sun-bathers in the Western countries. Further NO and NO2 gases were also found to react with the ozone. Apart from engineers, the organizations, laws of the country and local administration and market mechanisms are required to take up concerted efforts to protect the environment.

## What is Business Ethics. (3)

### BUSINESS ETHICS

- The term 'Business Ethics' refers to the system of moral principles and rules of the conduct applied to business. Business being a social organ shall not be conducted in a way detrimental to the interests of the society and the business sector itself. Every profession or group frames certain do's and do not's for its members. The members are given a standard in which they are supposed to operate. These standards are influenced by the prevailing economic and social situations. The codes of conduct are periodically reviewed to suit the changing circumstances.

### DEFINITIONS: BUSINESS ETHICS

- Business Ethics is generally coming to know what is right or wrong in the work place and doing what is right. This is in regard to effects of products/services and in relationship with the stake holders." —Cater Mcnamara

- "Business ethics in short can be defined as the systematic study of ethical matters pertaining to the business, industry or related activities, institutions and

beliefs. Business ethics is the systematic handling of values in business and industry." — John Donaldson

- There is no unanimity of opinion as to what constitutes business ethics. There are no separate ethics of business but every individual and organ in society should abide by certain moral orders.
- **Business ethics should take into consideration the following factors:**
- A business should aim to have fair dealing with everyone dealing with it.
- Ethics should be fixed for everyone working in the organisation at any level and their implementation should be linked with reward- punishment system.
- Any violation of ethics should be detected at the earliest and remedial measures taken immediately.
- Business ethics should be based on broad guidelines of what should be done and what should be avoided.
- The ethics should be based on the perception of what is right.

## What are the sources of business ethics? (6)

**SOURCES OF BUSINESS ETHICS**

- In every society there are three sources of business ethics-Religion, Culture and Law. The HR manager in every organisation, thus, has to be well versed with the unique system of values developed by these three sources.
- These sources are discussed as follows:
- **1. Religion**: Religion is the oldest source of Religion is the oldest source of ethical inspiration. There are more than ethical inspirations. 1, 00,000 religions which exist across the whole world, but all of them are in agreement on the fundamental principles. Every religion gives an expression of what is wrong and right in business and other walks of life. The Principle of reciprocity towards one's fellow beings is found in all the religions.

- Great religions preach the necessity for an orderly social system and emphasize upon social responsibility with an objective to contribute to the general welfare. With these fundamentals, every religion creates its own code of conduct.

**2.Culture:**Culture is the set of important understandings that members of a community share in common. It consists of a basic set of values, ideas, perceptions, preferences, concept of morality, code of conduct etc. which creates distinctiveness among human groups. When we talk about culture we typically refer to the pattern of development reflected in a society's pattern of knowledge, ideology, values, laws, social norms and day to day rituals. Depending upon the pattern and stage of development, culture differs from society to society. Moreover culture is passed from generation to generation. Culture facilitates the generation of commitment to something larger than one's individual self-interest.

- Culture encourages the members of the organisation to give priority to organizational goals over and above their personal interests. Culture also serves as a sense making and control mechanism that guides and shapes the attitudes and behaviour of people. Managers have to run an industrial enterprise on the cutting edge of cultural experience. The tension that their actions create makes the business ethically more complex.

- **3.Law:** The legal system of any country, guide the human behaviour in the society. Whatever, ethics the law defines are binding on the society? The society expects the business to abide by the law. Although it is expected that every business should be law abiding, seldom do the businesses adhere to the rules and regulations. Law breaking in business is common eg. Tax evasion, hoarding, adulteration, poor quality & high priced products, environment pollution etc.

**State the importance of business ethics. (7)**

## IMPORTANCE OF BUSINESS ETHICS

- **1.Corresponds to Basic Human Needs:** The basic need of every human being is that they want to be a part of the organisation which they can respect and be proud of, because they perceive it to be ethical. Everybody likes to be associated with an organisation which the society respects as a honest and socially responsible organisation. The HR managers have to fulfill this basic need of the employees as well as their own basic need that they want to direct an ethical organisation. The basic needs of the employees as well as the managers compel the organizations to be ethically oriented.

- **2.Credibility in the Public:** Ethical values of an organisation create credibility in the public eye. People will like to buy the product of a company if they believe that the company is honest and is offering value for money. The public issues of such companies are bound to be a success. Because of this reason only the cola companies are spending huge sums of money on the advertisements now-a-days to convince the public that their products are safe and free from pesticides of any kind.

- **3.Credibility with the Employees:** When employees are convinced of the ethical values of the organisation they are working for, they hold the organisation in high esteem. It creates common goals, values and language. The HR manager will have credibility with the employees just because the organisation has creditability in the eyes of the public. Perceived social uprightness and moral values can win the employees more than any other incentive plans.

- **4.Better Decision Making:**Respect for ethics will force a management to take various economic, social and ethical aspects into consideration while taking the decisions. Decision making will be better if the decisions are in the interest of the public, employees and company's own long term good.

- **5.Profitability:**Being ethical does not mean not making any profits. Every organisation has a responsibility towards itself also i.e., to earn profits. Ethical companies are bound to be successful and more profitable in the long run though in the short run they can lose money.

- 6. **Protection of Society:** Ethics can protect the society in a better way than even the legal system of the country. Where law fails, ethics always succeed. The government cannot regulate all the activities that are harmful to the society. A HR manager, who is ethically sound, can reach out to agitated employees, more effectively than the police.

**Describe the characteristics of business ethics?(7)**

## CHARACTERISTICS OF BUSINESS ETHICS

- To understand business ethics, it is necessary to know it's important characteristics. These are:

- **1.A Discipline:** Business ethics are the guiding principles of business function. It is the knowledge through which human behaviour is learnt in a business situation.

- **2.Ancient Concept:** Business ethics is an ancient concept. It has it origin with the development of human civilization.

- **3.PersonalDignity:**The principles of ethics develop the personal dignity. Many of the problems of ethics arise due to not giving dignity to individual. All the business decisions should be aimed by giving dignity to the customers, employees, distributors, shareholders and creditors, etc. otherwise they develop in immorality in the business conducts.

- **4.Related to Human Aspect:**Business ethics studies those activities, decisions and behaviors which are concerned with human aspect. It is the function of the business ethics to notify those decisions to customers, owners of business,

government, society, competitors and others on good or bad, proper or improper conduct of business.

- **5.Study of Goals and Means:** Business ethics is the study of goals and means for the rational selection of sacred objects and their fulfillment. It accepts the principles of "Pure goals inspire for pure means" and "Means justifies the end". It is essential that goals and means should be based on morals.

- 6.**Different from Social Responsibility:** Social responsibility mainly relates to the policies and functions of an enterprise, whereas business ethics to the conduct and behaviour of businessmen. But it is a fact that social responsibility of business and its policies is influenced by the business ethics.

- **7.Greater than Law:** Although the law approves various social decisions, but the law is not greater than ethics. Law is usually related to the minimum control of social customs whereas ethics gives importance to individual and social welfare actions.

**Define Computer Ethics.(3)**

## COMPUTER ETHICS

- The advent of computer and its vast applications are the fantastic outcome of the scientific and technological advancements. The unmeasurable utility value of the computers, have made a dramatic impact on business activities throughout the world. Computers have become the most essential **operative tools** in all the modern spheres of life such as engineering systems, scientific research studies, business and marketing activities. It is unfortunate to state that computer applications are **wrongly exploited and misused for various unethical purposes** thereby creating serious law and order implications in the human societies across the world. The unlawful and defrauding uses of computer applications constitute fundamental basis for the creation of true awareness on **computer ethics.**

- The term **computer ethics** refers to a specialized branch of engineering ethics to be adopted by the computer professionals and engineers to prevent the **misuse and abuse** of computer applications thereby maintaining secrecy and the moral confidence of the users. Computer ethics is defined as
- (*a*) study and analysis of nature and social impact of computer technology,
- (*b*) formulation and justification of policies, for ethical use of computers. This subject has become relevant to the professionals such as designers of computers, programmers, system analysts, system managers, and operators.
- The use of computers have raised a host of moral concerns such as free speech, privacy, intellectual property right, and physical as well as mental harm. There appears to be no conceptual framework available on ethics, to study and understand and resolve the problems in computer technology.Computers with Internet raise a host of difficult moral issues, many of them connected with basic moral concerns such as free speech, privacy, respect for property, informed consent and harm. To evaluate and deal with these issues, a new area of applied ethics called Computer Ethics has come up. These ethics are related to all the computer professionals such as programmers, analysts, operators, designers, etc. along with the users.

**Explain the major types of issues in computer ethics?(7)**

**Discuss in detail about moral & ethical issues involved in the use of computers and internet with examples? (14)**

## TYPES OF ISSUES

- **1. Computer as the Instrument of Unethical Acts:**(*a*) The usage of computer replaces the job positions. This has been overcome to a large extent by readjusting work assignments, and training everyone on computer applications such as word processing, editing, and graphics.

- (*b*) Breaking privacy. Information or data of the individuals accessed or erased or the ownership changed.

- (*c*) Defraud a bank or a client, by accessing and withdrawing money from other's bank account.

- **2. Computer as the Object of Unethical Act:**The data are accessed and deleted or changed.

- ***a) Hacking:*** The software is stolen or information is accessed from other computers. This may cause financial loss to the business or violation of privacy rights of the individuals or business. In case of defense information being hacked, this may endanger the security of the nation.

- ***(b) Spreading virus*:** Through mail or otherwise, other computers are accessed and the files are erased or contents changed altogether. 'Trojan horses' are implanted to distort the messages and files beyond recovery. This again causes financial loss or mental torture to the individuals. Some hackers feel that they have justified their right of free information or they do it for fun. However, these acts are certainly unethical.

- ***(c)Health hazard*:** The computers pose threat during their use as well as during disposal.

- ***3*. Problems Related to the Autonomous Nature of Computer :*(a) Security risk:***Recently the Tokyo Stock Exchange faced a major embarrassment. A seemingly casual mistake by a junior trader of a large security house led to huge losses including that of reputation. The order through the exchange's trading system was to sell one share for 600,000 *Yen*. Instead the trader keyed in a sale order for 600,000 shares at the rate of one *Yen* each. Naturally the shares on offer at the ridiculously low price were lapped up. And only a few buyers agreed to reverse the deal! The loss to the securities firm was said to be huge, running into several hundred thousands. More important to note, such an obvious mistake could not be corrected by some of the advanced technology

available. For advanced countries like Japan who have imbibed the latest technology, this would be a new kind of learning experience.

- ***b*) *Loss of human lives*:** Risk and loss of human lives lost by computer, in the operational control of military weapons. There is a dangerous instability in automated defense system. An unexpected error in the software or hardware or a conflict during interfacing between the two, may trigger a serious attack and cause irreparable human loss before the error is traced. The Chinese embassy was bombed by U.S. military in Iraq a few years back, but enquiries revealed that the building was shown in a previous map as the building where insurgents stayed.

- (*c*) In flexible manufacturing systems, the autonomous computer is beneficial in obtaining continuous monitoring and automatic control.

## COMPUTERS IN WORKPLACE

The ethical problems initiated by computers in the workplace are:

- **1. Elimination of routine and manual jobs**: This leads to unemployment, but the creation of skilled and IT-enabled service jobs are more advantageous for the people. Initially this may require some up gradation of their skills and knowledge, but a formal training will set this problem right. For example, in place of a typist, we have a programmer or an accountant.

- ***2. Health and safety:***The ill-effects due to electromagnetic radiation, especially on women and pregnant employees, mental stress, wrist problem known as *Carpel Tunnel Syndrome*, and back pain due to poor ergonomic seating designs, and eye strain due to poor lighting and flickers in the display and long exposure, have been reported worldwide. Over a period of long exposure, these are expected to affect the health and safety of the people. The computer designers should take care of these aspects and management should monitor the health and safety of the computer personnel.

- **3. Computer failure:**Failure in computers may be due to errors in the hardware or software. Hardware errors are rare and they can be solved easily and quickly. But software errors are very serious as they can stop the entire network. Testing and quality systems for software have gained relevance and importance in the recent past, to avoid or minimize these errors.

## PROPERTY ISSUES

- The property issues concerned with the computers are:
- 1. Computers have been used to extort money through anonymous telephone calls.
- 2. Computers are used to cheat and steal by current as well as previous employees.
- 3. Cheating of and stealing from the customers and clients.
- 4. Violation of contracts on computer sales and services.
- 5. Conspiracy as a group, especially with the internet, to defraud the gullible, stealing the identity and to forge documents.
- **6. Violation of property rights:**Is the software a property? The software could be either a Program (an algorithm, indicating the steps in solving a problem) or a Source code (the algorithm in a general computer language such as FORTAN, C and COBOL or an Object code (to translate the source code into the machine language). How do we apply the concept of property here? This demands a framework for ethical judgments.
- Property is what the laws permits and defines as can be owned, exchanged, and used. The computer hardware (product) is protected by patents. The software (idea, expression) is protected by copyrights and trade secrets. But algorithms cannot be copyrighted, because the mathematical formulas can be discovered but not owned. The object codes which are not intelligible to human beings cannot be copyrighted. Thus, we see that reproducing multiple copies from one

copy of (licensed) software and distribution or sales are crimes. The open source concepts have, to a great extent, liberalized and promoted the use of computer programs for the betterment of society.

**Describe the ethical features involved in computer crime? (7)**

## COMPUTER CRIME

- The ethical features involved in computer crime are as follows:
- ***Physical Security:*** The computers are to be protected against theft, fire, and physical damage. This can be achieved by proper insurance on the assets.
- ***2. Logical security:*** The aspects related are
- (*a*) the privacy of the individuals or organizations,
- (*b*) confidentiality,
- (*c*)integrity, to ensure that the modification of data or program are done only by the authorized persons,
- (*d*) uninterrupted service. This is achieved by installing appropriate uninterrupted power supply or back-up provisions.
- (e) protection against hacking that causes dislocation or distortion. Licensed anti-virus packages and firewalls are used by all computer users to ensure this protection.
- Passwords and data encryption have been incorporated in the computer software as security measures. But these have also been attacked and bye-passed. But this problem is not been solved completely.

**Major weaknesses in this direction are:**

- (*a*) the difficulty in tracing the evidence involved and

- (*b*)absence of stringent punishment against the crime. The origin of a threat to the Central Government posted from an obscure browsing center, remained unsolved for quite a long time. Many times, such crimes have been traced, but there are no clear *cyber laws* to punish and deter the criminals.

## PROFESSIONAL RESPONSIBILITY

- The computer professionals should be aware of different conflicts of interests as they transact with other at different levels. The IEEE and Association for Computing Machinery (ACM) have established the codes of ethics to manage such responsibilities.

## COMPUTER ETHICAL CODES

- The ten commandments of Computer Ethics, created in 1992 by the Computer Ethics Institute consists of the following −

  One should **never** use a computer:

  - **To harm the people (anti-social activities)**
  - **To interfere with other's work (illegal manipulations)**
  - **To snoop into other's files (malware)**
  - **To steal a computer/data (hacking)**
  - **To bear false witness (manipulation and morphing)**
  - **To use/ copy a software you didn't pay for (like illegal downloads and**
  - **usages)**
  - **To use or copy other's software without compensations (illegal pirated**
  - **versions)**

- **To use other's intellectual output inappropriately (violating IPR)**
- **Doing without thinking of social consequences of the program being written (libeling)**
- **Always use a computer ensuring consideration and respect towards fellow beings.**

- An engineer who is responsible in developing a tool program is not entitled to take that program, when he or she goes for a new job, without the direct concurrence of the first employer.Computer system analysts must have the moral commitment and accountability, when their programs develop errors thereby affecting the safety and basic rights of the people.The engineers working as project leaders should be obliged to have the necessary corrections in the programs that might cause any injustice or property damage to the customer or consumer.However, these ethics are facing lax in today's world. A very small section of concerned individuals seems to be following these ethics. A large section seems to be violating these ethics. With this, there is an unprecedented increase in cybercrime.

**Explain the role of computers in technological development? (7)**

**ROLE OF COMPUTERS IN TECHNOLOGICAL DEVELOPMENT**

- In this section, we will discuss the role of Computers in Technological Development. The limitations of Internet usage and free speech are to be known clearly by every netizen. In this digital era, the morals expected from a human being are the basic tools that control the unethical and sleazy manner of handling the internet.Internet which is now a global network of networks, initially used the infrastructure of the telephone system and is now being handled by many telecommunication systems by wire, fiber or wireless systems.

- The Internet provides a spring of new ways to be in contact with other people and with sources of information. It has also created greater convenience in ordering consumer items, paying bills and **social experiments** trading stocks and bonds. Like other major, it also has raised a host of new issues. One set of issues centers on free speech, including control of obscene forms of pornography, hate speech, spam which is unwanted commercial speech and rebel. Computers contribute to greater centralization or decentralization insofar as human decision makers direct them.

- There come issues which call for trouble wherein, computers are used in embezzlement and other forms of stealing money or financial assets. The issues concerning theft of software and information is again a similar one. The computers are centrally involved when an unauthorized person uses a telephone computer system to obtain private phone numbers or when maliciously alters or scrambles the programming of a telephone computer. In today's world, malicious people have come up with not one but various ways of exploiting money, goods, services, assets, etc. through the computers and internet. The Internet besides easing our work has also paved way to gather an individual's confidential details easily.

- The two main factors that make computers troublesome are their speed and geographical coverage, which allows the masses to be victimized further. The difficulty lies in tracing the underlying transactions to apprehend the thieves. This problem is compounded when the communication lines linking the computers involved cross national boundaries.

- The most commonly discussed cases of computer abuse are instances such as

    - **The stealing or cheating by employees at work.**
    - **The stealing by non-employees or former employees.**
    - **The stealing from or cheating clients and consumers.**
    - **The violation of contracts for computers sales or services.**

- **The many conspiracies to use computer networks to engage in widespread fraud.**

➢ Alarmingly, the Internet has led to an explosion of identity theft, in which personal information is obtained and used to forge documents and commit fraud.

**Examine the privacy & anonymity related issues with computer? (7)**

## PRIVACY & ANONYMITY

The data transmission and accessibility have improved tremendously by using the computers, but the right to privacy has been threatened to a great extent. Some issues concerned with the privacy are listed hereunder:

- ***1. Records of Evidence:*** Service records or criminal records and the details of people can be stored and accessed to prove the innocence or guilty. Records on psychiatric treatment by medical practitioners or hospital, or records of membership of organizations may sometime embarrass the persons in later years.

- ***2.Hacking:***There are computer enthusiasts who wilfully or for fun, plant virus or "Trojan horses" that may fill the disc space, falsify information, erase files, and even harm the hardware. They breakdown the functioning of computers and can be treated as violation of property rights. Some hackers opine that the information should be freely available for everybody. It is prudent that the right to individual privacy in limiting the access to the information on oneself, should not be violated. Further any unauthorized use of personal information (which is a property), is to be considered as theft. Besides the individual privacy, the national security, and freedom within the economy are to be respected. The proprietary information and data of the organizations are to be protected so that they can pursue the goals without hindrance.

- ***3.Legal Response:***In the Indian scene, the Right to Information Act 2005 provides the right to the citizens to secure access to information under the control of public authorities, including the departments of the central government, state governments, government bodies, public sector companies and public sector banks, to promote transparency and accountability of public authorities.

- ***4. Anonymity:*** Anonymity in the computer communication has some merits as well as demerits. While seeking medical or psychological counselling or discussion (chat) on topics, such as AIDS, abortion, gay rights, the anonymity offers protection (against revealing their identity). But frequently, anonymity is misused by some people for money laundering, drug trafficking and preying upon the vulnerable.

**Examine the role of engineers as managers.(8)**

## ENGINEERS AS MANAGERS

- Engineers possess the inherent ability to provide proper leadership in guiding the organizations and corporates for the achievement of successful prospects. During their academic curriculum, the engineering graduates are moulded to develop prospective responsibilities and career managements which are the essential requirements to become efficient managers and administrators. They are also imparted with orientation skills to cope with any abnormal situations in their careers.

- An engineer, whether he works individually or works for a company, has to go through some ethical issues, mostly under conditions such as, conceptualization of a product, issues arising in design and testing departments, or may be on the issues involving the manufacturing, sales and services. An Engineer is responsible in promoting ethics in an organization, through framing organizational policies, responsibilities and by personal attitudes and obligations.Suppose, an issue occurs which might lead to a conflict, an

engineer or say a professional should respond pertaining to specific morals and professional ethics.

- An engineer should be able to work as a manager in such situations, resolving conflicts according to priorities, keeping the organizational benefits in mind. The issue must be resolved without hurting anyone's feelings and by developing a mutual understanding with subtlety. Not only the engineers who act as managers or the managers alone will share the responsibility, but there lies some social responsibility to stakeholders, customers and employers of a company. They act to develop wealth as well as the welfare of the society.
- Ethicists project the view that the manager's responsibility is only to increase the profit of the organization, and only the engineers have the responsibility to protect the safety, health, and welfare of the public. But the manager, though an engineer or not, has the ethical responsibility to produce safe and good products (or useful service), while showing respect for fellow human beings including his employees, customers and the public. Hence, the objective for the managers and engineers is to produce valuable products that are also profitable.

**The characteristics of engineers as managers are:**

- 1. Promote an ethical climate, through framing organization policies, responsibilities and by personal attitudes and obligations.
- 2. Resolving conflicts, by evolving priority, developing mutual understanding, generating various alternative solutions to problems.
- 3. Social responsibility to stakeholders, customers and employers. They act to develop wealth as well as the welfare of the society. Ethicists project the view that the manager's responsibility is only to increase the profit of the organization, and only the engineers have the responsibility to protect the safety, health, and welfare of the public. But managers have the ethical responsibility to produce safe and good products (or useful service), while showing respect for the human beings who include the employees, customers

and the public. Hence, the objective for the managers and engineers is to produce valuable products that are also profitable.

- Engineers possess the technological skills and professional excellence by which they transform themselves into sensitive area of managing the corporate companies. Moreover, several local and multinational companies are quite aware of the potential capabilities of engineers, whom they believe would quickly understand the business techniques of any corporate body, than the non-engineering graduates and their competent qualities in the finding of suitable remedies for problems. Interestingly, graduate engineers become convinced by the attractive offers of incentives and higher emoluments and prestigious placement positions made by corporate companies.

**Define Managing conflicts.(3)**

## MANAGING CONFLICTS

- It is the common feature that several corporate companies face crucial problems with respect to the settlement of conflicts. These management disputes and conflicts should be amicably settled and resolved by the intervention of company managers who have been endowed with the administrative skills and tactful decisions. Sometimes, managers should exercise their commanding positions with enough force for the smooth settlement of claims and conflicts.A conflict is a result of differences in opinions. Conflicts generally arise where the work is shared among more than one members. In fact, the situations of conflicts should be tolerated with patience, understood impartially and resolved by the participation by all the concerned.

**When a project is distributed among a few members, the conflicts that generally occur are :**

- The schedule based conflicts might occur at different levels of execution of a project, depending upon the priorities and limitations at each level.

- The prioritizing of projects or departments which can be arrived from end requirements may change from time to time.
- The deficiency of personnel availability for certain project completion in due time may also lead to a conflict.
- Conflicts that occur over technical, economic, and time factors such as cost, time, and performance level.
- Conflict arising in administration such as authority,responsibility, accountability, and logistics required.
- Conflicts of personality, human psychology and ego problems.
- Conflict over expenditure and its deviations.
- Picking out on the personnel creating may keep others away from the problem and doesn't affect everyone. Such personnel can be trained again or given precautions.
- The interest of the personnel doing a project should be focused on the ethical attitudes and morals but not on their positions. In addition, the conflicts between the personnel, can be solved by the manager who has more ways to solve it. The evaluation of the results should be based on certain specified objectives such as efficiency, quality, and customer satisfaction.

**MOST OF THE CONFLICTS CAN BE RESOLVED BY FOLLOWING THE PRINCIPLES LISTED HERE:**

- ***1.People:*** Separate people from the problem. It implies that the views of all concerned should be obtained. The questions such as what, why, and when the error was committed is more important than to know who committed it.
- ***2. Interests: Focus*** must be only on interest i.e., the ethical attitudes or motives and not on the positions (i.e., stated views). A supplier may require commission larger than usual prevailing rate for an agricultural product. But the past

analysis may tell us that the material is not cultivated regularly and the monsoon poses some additional risk towards the supply. Mutual interests must be respected to a maximum level. What is right is more important than who is right!

- ***3. Options: Generate*** various options as solutions to the problem so that there is no time lag in decision making. This helps a manager to try the next best solution should the first one fails.
- ***4. Evaluation:The*** evaluation of the results should be based on some specified objectives such as efficiency, quality, and customer satisfaction. More important is that the means, not only the goals, should be ethical.

**Discuss a) Consulting engineers. (6)**

**CONSULTING ENGINEERS**

- The consulting engineers work in private. There is no salary from the employers. But they charge fees from the sponsor and they have more freedom to decide on their projects. Still they have no absolute freedom, because they need to earn for their living.The consulting engineers differ from the salaried engineers of an organization. These consulting engineers work in private and are paid per advice they offer or for the service they provide in a field of specialized knowledge or training. Consultants are individuals who typically work for themselves but may also be associated with a consulting firm.
- Consultants can play a multi-faceted role; for example, they function as advisors, fixers, bosses, generalists, stabilizers, listeners, advisors, specialists, catalysts, managers or quasi-employees. Bringing in an expert can save time, effort and money. It has been estimated that approximately 3/4 of all companies call upon consultants at one time or another. Many companies claim that they receive a higher return for their invested dollars by using consultants for specific tasks.A Consulting Engineer should maintain the ethical values in the profession, such as giving proper information without any ambiguities for

advertisements, the allowance of small individual companies to participate in bidding and also maintaining clarity in the contingency fee which is previously agreed. The greater amount of job freedom enjoyed by consulting engineers as opposed to salaried engineers leads to wider areas of responsible decision making concerning safety.

**THE CONSULTING ENGINEERS HAVE ETHICAL RESPONSIBILITIES DIFFERENT FROM THE SALARIED ENGINEERS, AS FOLLOWS:**

- **1. ADVERTISING:** The consulting engineers are directly responsible for advertising their services, even if they employ other consultants to assist them. But in many organisations, this responsibility is with the advertising executives and the personnel department. They are allowed to advertise but to avoid deceptive ones. Deceptive advertising such as the following are prohibited:
- (*a*) By white lies.
- (*b*) Half-truth, e.g., a product has actually been tested as prototype, but it was claimed to have been already introduced in the market. An architect shows the photograph of the completed building with flowering trees around but actually the foundation of the building has been completed and there is no real garden.
- (*c*) Exaggerated claims: The consultant might have played a small role in a well-known project. But they could claim to have played a major role.
- (*d*) Making false suggestions. The reduction in cost might have been achieved along with the reduction in strength, but the strength details are hidden.
- (e) Through vague wordings or slogans.
- **2. Competitive Bidding:** It means offering a price, and get something in return for the service offered. The organizations have a pool of engineers. The expertise can be shared and the bidding is made more realistic. But the individual consultants have to develop creative designs and build their

reputation steadily and carefully, over a period of time. The clients will have to choose between the reputed organizations and proven qualifications of the company and the expertise of the consultants. Although competent, the younger consultants are thus slightly at a disadvantage.

- **3. <u>CONTINGENCY FEE:</u>**This is the fee or commission paid to the consultant, when one is successful in saving the expenses for the client. A sense of honesty and fairness is required in fixing this fee. The NSPE Code III 6 (*a*) says that the engineers shall not propose or accept a commission on a contingent basis where their judgment may be compromised. The fee may be either as an agreed amount or a fixed percentage of the savings realized. But in the contingency fee-agreements, the judgment of the consultant may be biased. The consultant may be tempted to specify inferior materials or design methods to cut the construction cost. This fee may motivate the consultants to effect saving in the costs to the clients, through reasonably moral and technological means.

- **<u>4. SAFETY AND CLIENT'S NEEDS:</u>**The greater freedom for the consulting engineers in decision making on safety aspects, and difficulties concerning truthfulness are the matters to be given attention. For example, in design-only projects, the consulting engineers may design something and have no role in the construction.

- Sometimes, difficulties may crop-up during construction due to non-availability of suitable materials, some shortcuts in construction, and lack of necessary and adequate supervision and inspection. Properly-trained supervision is needed, but may not happen, unless it is provided. Further, the contractor may not understand and/or be willing to modify the original design to serve the clients best. A few on-site inspections by the consulting engineers will expose the deficiency in execution and save the workers, the public, and the environment that may be exposed to risk upon completion of the project.

**The NSPE codes on the advertisement by consultants provide some specific regulations. The following are the activities prohibited in advertisement by consultant:**

- 1. The use of statement containing misrepresentation or omission of a necessary fact.
- 2. Statement intended or likely to create an unjustified expectation.
- 3. Statement containing prediction of future (probable) success.
- 4. Statement intended or likely to attract clients, by the use of slogans or sensational language format.

**Discuss: Engineers as Expert Witnesses (6)**

**Discuss about role of engineers as expert witness. (7)**

## ENGINEERS AS EXPERT WITNESSES

- Frequently engineers are required to act as consultants and provide expert opinion and views in many legal cases of the past events. They are required to explain the causes of accidents, malfunctions and other technological behavior of structures, machines, and instruments, e.g., personal injury while using an instrument, defective product, traffic accident, structure or building collapse, and damage to the property, are some of the cases where testimonies are needed. The focus is on the past.

**The engineers, who act as expert-witnesses, are likely to abuse their positions in the following manners:**

- **1.HiredGuns:**Mostly lawyers hire engineers to serve the interest of their clients. Lawyers are permitted and required to project the case in a way favorable to their clients. But the engineers have obligations to thoroughly examine the events and demonstrate their professional integrity to testify only the truth in the court. They do not serve the clients of the lawyers directly. The

hired guns forward white lies and distortions, as demanded by the lawyers. They even withhold the information or shade the fact, to favor their clients.

- ***2.MoneyBias:***Consultants may be influenced or prejudiced for monitory considerations, gain reputation and make a fortune.

- ***3.EgoBias:****The* assumption that the own side is innocent and the other side is guilty, is responsible for this behavior. An inordinate desire to serve one's client and get name and fame is another reason for this bias.

- ***4.SympathyBias:***Sympathy for the victim on the opposite side may upset the testimony. The integrity of the consultants will keep these biases away from the justice. The court also must obtain the balanced view of both sides, by examining the expert witnesses of lawyers on both sides, to remove a probable bias.

## DUTIES

- 1.The expert-witness is required to exhibit the responsibility of *confidentiality* just as they do in the consulting roles. They cannot divulge the findings of the investigation to the opposite side, unless it is required by the court of law.

- 2.More important is that as witness they are *not required to volunteer* evidence favorable to the opponent. They must answer questions truthfully, need not elaborate, and remain neutral until the details are asked for further.

- 3.They should be *objective* to discover the truth and communicate them honestly.

- 4.The stand of the experts depends on the *shared understanding* created within the society. The legal system should be respected and at the same time, they should act in conformance with the professional standards as obtained from the code of ethics.

- 5.The experts should earnestly be *impartial* in identifying and interpreting the observed data, recorded data, and the industrial standards. They should not

distort the truth, even under pressure. Although they are hired by the lawyers, they do not serve the lawyers or their clients. They serve the justice. Many a time, their objective judgments will help the lawyer to put up the best defense for their clients.

- 6.Where expert evidence refers photographs ,plans, calculations, analyses ,measurements ,survey reports or other similar documents ,these must be provided to the opposite party at the same time as the exchange of reports.

## ENGINEERS AS ADVISORS IN PLANNING AND POLICY MAKING

- **Public planning** and **policy-making** are the two significant aspects that promote technological advancements and achievements in all countries. Several segments of our communities such as economists, sociologists, engineers and other professionals are involved in both public planning and policy-making. Engineers are associated with both of these processes which directly depend upon the inputs of public funds. The merits and demerits of any project such as transport, housing land reforms and energy sector, are to be actively considered as the basic part of policy-making. In contrast, planning requires technical information from qualified technologists about the risks and advantages of a specific project.The engineers are required to give their view on the future such as in planning, policy-making, which involves the technology. For example, should India expand nuclear power options or support traditional energy sources such as fossil fuels or alternative forms like solar and wind energy? In the recent past, this topic has created lot of fireworks, in the national media.

- Generally engineers with high experience and expertise act as advisors .An engineer has freedom to accept an offer to provide advice on a project in which he alone cannot asses the project wholly because the project has some areas out of his knowledge .In such cases the advisor should engage another qualified person to assess that part of the project and his contribution should be limited to his expertise.

**Various issues and requirements for engineers who act as advisors are:**

- ***1.Objectivity:*** *The* engineers should study the cost and benefits of all possible alternative means in objective manner, within the specified conditions and assumptions.
- ***2.Study All Aspects:*** *They* have to study the economic viability (effectiveness), technical feasibility (efficiency), operational feasibility (skills) and social acceptability, which include environmental and ethical aspects, before formulating the policy.
- ***3.Values:***Engineers have to posses the qualities, such as (*a*) honesty, (*b*) competence (skills and expertise), (*c*) diligence (careful and alert) (*d*) loyalty in serving the interests of the clients and maintaining confidentiality, and (*e*) public trust, and respect for the common good, rather than serving only the interests of the clients or the political interests.
- ***4.Technical Complexity:*** *The* arbitrary, unrealistic, and controversial assumptions made during the future planning that are overlooked or not verified, will lead to moral complexity. The study on future is full of uncertainties than the investigations on the past events. On the study of energy options, for example, assumptions on population increase, life style, urbanization, availability of local fossil resources, projected costs of generating alternative forms of energy, world political scenario, world military tensions and pressures from world organizations such as World Trade Organization (W.T.O.) and European Union (EU) may increase the complexity in judgment on future.
- ***5.NationalSecurity:*** The proposed options should be aimed to strengthen the economy and security of the nation, besides safeguarding the natural resources and the environment from exploitation and degradation.

**Explain the various played by engineers who work as advisors? (7)**

**1. HiredGuns:** This model highlights the client's wishes and acts accordingly. All the other factors are given less priority. Assumptions about uncertainties are inclined in a direction favorable to the client's case.

- **2.Value-Neutral Analysts:**This model expresses the idea of being neutral and the avoidance of any form of advocacy towards anyone. The cost-benefit analyses if made, are to be done according to the value criteria, explicitly.
- **3.Value-Guided Advocates:**This model advocates the idea that it is the responsibility of engineers to keep the public good in mind and maintain honesty about both technical facts and the values that guide their studies.

**Define moral leadership. (3)**

**Justify the need for moral leadership in today's business environment. (3)**

## MORAL LEADERSHIP

- Engineers provide many types of leadership in the development and implementation of technology, as managers, entrepreneurs, consultants, academics and officials of the government. Moral leadership is not merely the dominance by a group. It means adopting reasonable means to motivate the groups to achieve morally desirable goals. This leadership presents the engineers with many challenges to their moral principles. It has been an interesting discussion that engineers take up several types of leadership similar to other professionals such as corporate consultants, academicians and government officials. Engineers are best suited to be **'efficient moral leaders'** to set an exemplary models both in their technical professions and community societies.

- Engineers, within their communities and professions contribute to technological process, as managers, business entrepreneurs, corporate consultants, academics and government officials they provide many forms of leadership in developing and implementing technology. Leadership can be understood as success in moving a group collectively, towards goals.Moral leaders, are the individuals who direct, motivate, organize, creatively manage, or in other ways move groups towards morally valuable goals. Leaders might be in position of authority within a corporation, or they might not be. Leadership can be shown by individuals participating at all levels of organizations.

## MORALLY CREATIVE LEADERS

- Moral leaders are morally creative. This does not mean that they discover or improvise new moral values from scratch. Moral values are the product of centuries and millennia of gradual development, not instantaneous invention. Moral creativity consists in identifying the most important values that apply in a particular situation, bringing them into focus through effective communication within groups and forming workable commitments to implement them.Moral creativity is achieving success through new ways of thinking with standard moral values. This is achieved by identifying new possibilities for applying, extending and putting values into practice rather than inventing new values for temporary comforts. But, this requires fresh moral insights with deeper commitments grounded in integrity.

## PARTICIPATION IN PROFESSIONAL SOCIETIES

- Professional Societies do more than just promoting continuing education for their members. They also serve to unify a profession, and to speak and act on behalf of it. Professional societies provide a forum for communicating, organizing and mobilizing change within and by large groups, which has a moral dimension. After few incidents, many of the tensions existed in

professional societies are because of the uncertainties about their involvement in moral issues.

- Effective professional activity whether in Engineering or any other profession, requires a substantial degree of trust from clients and the public. Total absence of such trust would undermine the possibility of making contracts, engaging in cooperative work, exercising professional autonomy free of excessive regulation and working under humane conditions. Building and sustaining that trust is an important responsibility shared by all engineers. It is also an area where moral leadership within professional societies is really important.

## LEADERSHIP IN COMMUNITIES

- In communities and groups, the issues that bother and that are important should be informed to everyone. But the stronger obligations arise for those who by professional background are well grounded in specific issues as well as for those who have time to train themselves as Public advocates. It shows that there is certainly a need for moral leadership in identifying and expanding the areas of possible good that can be achieved.

## IDEALS OF VOLUNTARY SERVICE

- The need for moral leadership in Engineering, emphasizes the need for involvement in professional societies and in community service. The leadership should have substantial involvement in professional societies which, in addition to furthering technical knowledge and representing engineers collectively, help in establishing high standards of moral integrity within the profession. The moral leadership should also have some involvement in community service. Moral leadership does not consist of moral elitism and dominance, but instead moral creativity in helping to guide, organize and stimulate groups toward morally desirable goals.

**Moral leadership is essentially required for the Engineers, for the reasons listed as follows:**

- 1. It is leading a group of people towards the achievement of global and objectives. The goals as well as the means are to be moral. For example, Hitler and Stalin were leaders, but only in an instrumental sense and certainly not on moral sense.
- 2. The leadership shall direct and motivate the group to move through morally desirable ways.
- 3. They lead by thinking ahead in time, and morally creative towards new applications, extension and putting values into practice. 'Morally creative' means the identification of the most important values as applicable to the situation, bringing clarity within the groups through proper communication, and putting those values into practice.
- 4. They sustain professional interest, among social diversity and cross-disciplinary complexity. They contribute to the professional societies, their professions, and to their communities. The moral leadership in engineering is manifested in leadership within the professional societies. The professional societies provide a forum for communication, and canvassing for change within and by groups.
- 5. *Voluntarism*: Another important avenue for providing moral leadership within communities, by the engineers is to promote services without fee or at reduced fees (pro bono) to the needy groups. The professional societies can also promote such activities among the engineers. This type of voluntarism (or philanthropy) has been in practice in the fields of medicine, law and education. But many of the engineers are not self-employed as in the case of physicians and lawyers. The business institutions are encouraged to contribute a percentage of their services as free or at concessional rates for charitable purposes.

- 6. *Community service*: This is another platform for the engineers to exhibit their moral leadership. The engineers can help in guiding, organising, and stimulating the community towards morally- and environmentally-desirable goals. The corporate organizations have come forward to adopt villages and execute many social welfare schemes, towards this objective.

**Examine the importance of engineers as moral leaders. (7)**

## ROLE OF ENGINEERS AS MORAL LEADERS

- **1.They work for more goals**: Engineers are applying their specialized knowledge and skills to improve the technologies with a purpose of improving the wellbeing of the people and society ,a morally motivated goal.
- **2.They choose morally desirable ways:**Engineers lead the team members by providing support and guidance in a creative manner and motivate them in their job in morally desirable ways, adhering the ethical standards.
- **3.They add to moral creativity:**Moral creativity refers to achieving success through new ways of thinking with moral standards. Moral creativity consists of identifying the most important values, bringing them into focus through effective communication and bring clarity among the group members and finally putting those values into practice.
- **4.Add to Professional Trust:** Moral leadership of engineers within the professional groups can bring trust towards their profession and professional groups. Effective professional activity requires a good level of trust from the clients and the public. Engineers as moral leaders can build and sustain a good level of trust among the clients.
- **5. Philanthrophy and Community Development:** Engineers as moral leaders can contribute at large in voluntarily to develop the weaker sections of population in areas like housing, sanitation, infrastructure development and provide drinking water.They can also support communities in making awareness about environment,pollution, bio diversity and such issues that

threatens human life and the entire eco system.In addition to this,many voluntary organisations are adopting villages for improving the basic needs of rural people as a part of their social responsibility.

## SAMPLE CODE OF CONDUCT

**Name any three professional societies and their role relevant to engineers. (3)**

- The professional societies for engineers have formulated few codes of ethics which are expected to be followed by an engineer of the particular discipline. Following are a few societies that look into the discipline in Engineering −
    - **NSPE** − National Society of Professional Engineers
    - **IEEE** − The Institute of Electrical and Electronics engineering
    - **AIChE**− American Institute of Chemical Engineers
    - **ASCE** − American Society of Civil Engineers
    - **ASME** − American Society of Mechanical Engineers
    - **ACM/IEEE/CS** − Joint Task Force on Software Engineering Ethics and Professional Practices.
- All these societies have proposed different codes of ethics expecting adherence from the Engineers, to the highest standard of ethical conduct. This not only helps the societies but also the Engineers.The **NSPE** (National Society of Professional Engineers) has formulated codes as engineering has a direct and vital impact on the quality of life for all the people. Accordingly, the services provided by engineers require honesty, impartiality, fairness and equity and must be dedicated to the protection of the public health, safety and welfare.

**The fundamental things to be kept in mind, while engineers fulfill their professional duties are the following −**

- Hold paramount the safety, health and welfare of the public.

- Perform services only in area of their competence.
- Issue public statements only in an objective and truthful manner.
- Act for each employer or client as faithful agents or trustees.
- Avoid deceptive acts.
- Conduct themselves honorably, responsibly, ethically and lawfully so as to enhance the honor, reputation and usefulness of the profession.

All the other societies have proposed the code of ethics to be followed in their respective disciplines, by the engineers. The professional ethics should be accompanied by moral concerns, in acting responsibly towards the profession while being in ethical limits.

**The Codes of Ethics promote and sustain the ethical environment and assist in achieving the ethical goals in the following manner:**

- It creates an environment in a profession, where ethical behavior is the basic criterion.
- It guides and reminds the person as to how to act, in any given situation.
- It provides support to the individual, who is being pressurized or tortured by a superior or employer, to behave unethically.
- Apart from professional societies, companies and universities have framed their own codes of ethics, based on the individual circumstances and specific mission of the organizations.

## QUESTIONS

### Part-A (3mark questions)

1. Global issues are a big challenge to Engineers -Discuss.
2. Discuss multinational corporation from ethical point of view:
3. What is meant by international rights on Global issues?

4. Write any four international rights guidelines suggested by Donaldson.
5. What is technology transfer and appropriate technology?
6. What is environmental ethics?
7. Explain how the environmental degradations are minimized.
8. Discuss cost-oblivious approach.
9. Discuss the following
   (a) Acid rain (b) Global warming
10. How do you internalize the costs of environmental degradation?
11. What is technology assessment
12. What are the four types of ethics under environmental degradation?
13. What do you mean by Eco centric ethics?
14. Discuss: Computer Ethics.
15. Name different types of problems in computer ethics.
16. List the ethical problems by computers in workplace.
17. What are the merits and demerits of anonymity in computer organization?
18. What are the important issues of computer ethics?
19. What is hacking in computer ethics?
20. What is Autonomous computers?
21. Write any two computer ethical codes.
22. What is the role of engineers in defense industry?
23. Discuss: Engineers as Managers.
24. Define Ethical climate.
25. What is managing conflict?
26. List any three types of conflicts that are frequently reported by the engineering managers.
27. What are the suggestive measures that are used for solving managerial conflicts?
28. Discuss: Consulting Engineers.
29. Consulting Engineers for advertising: - Discuss.
30. What is competitive bidding in consulting Engineers?

31. Define contingency fee.
32. Differentiate consulting engineers with salaried engineers.
33. Engineers as Expert witnesses Discuss.
34. Highlight the issues of engineers as expert witness.
35. What are the factors that will motivate an Engineer to be more conscious and vigilant about his crucial role of expert witness?
36. What is abuse in expert witnesses?
37. What are the types of biases that are contributed by the ethical abuses?
38. Explain 'moral leadership'.
39. Discuss the participation of professional societies in moral leadership
40. Name any four professional engineering society's that framed the codes of ethics.
41. Write any two codes of ethics in the area of safety, health and welfare of the public.
42. List the features of human rights.
43. Define 'technology transfer'
44. Define appropriate technology.
45. What are the duties of an engineer as an experimenter in environmental ethics?
46. Give the reasons for an engineer to involve in weapons development.
47. List the ethical responsibilities of consulting engineers.
48. List the provision of NSPE code on the advertisement by consultant.
49. Differentiate ethical relativism &ethical absolutism.
50. Differentiate technology transfer & appropriate technology.

## PART – B

## ESSAY (14 marks)

1. Briefly discuss the role of multinational corporations in global issues.
2. Does globalization solve the global issues? Why or why not
3. Explain the role of engineers as managers.
4. Explain the meaning and relevance of environmental ethics?
5. Write a brief account on the various aspects of internal rights of multinational companies with the emphasis on the promotion of morally just measures.

6. Briefly explain the association of technology transfer and appropriate technology with the multinational corporations.
7. Highlight the features of different types of environmental ethics with suitable examples.
8. Write briefly about the salient features of computer ethics.
9. Write a brief account on the involvement of engineers in weapons development.
10. Briefly discuss the various aspects of engineers as managers.
11. Briefly explain the important responsibilities of consulting engineers.
12. How you can justify the statement 'engineers could efficiently act as expert witnesses and advisers'.
13. Explain the role of engineers as moral leaders in professional societies.
14. What are the different aspects of engineering profession in providing voluntary service?
15. Write a brief account on "sample code of conduct".
16. Explain the active participation of a various professional societies in codes of Ethics.

17.Discuss on the pros and cons of multinational companies from the point of view of ethics.

18. Discuss on the engineer’s role in weapon development.

19.Explain the anthropocentric view on environmental ethics? How far it is different eco-centric world view.

20. Explain the various environmental issues faced by the world.

21.Describe the different types of issues found in computer ethics?

22.List any three types of conflicts that are frequently reported by the engineering managers.

23.What are the suggestive measures that are used for solving managerial conflicts?

24. State the importance of moral leadership in engineering profession.

25. Explain the role of engineers as moral leaders.

26.Explain the role of computers in technological development.

# UNIVERSITY QUESTIONS

## MODULE: 5

## GLOBAL ETHICAL ISSUES

## SHORT ANSWER (3 MARKS)

1. Conclude the features of Biocentric ethics.

2. Name any three professional societies and their role relevant to engineers

3. What is business ethics?

4. List any three characteristics of Business ethics.

5. List any three ethical responsibilities of consulting engineer.

6. What is environmental ethics?

8. Justify the need for moral leadership in today's business environment

9. Describe the various requirements for engineers who act as advisors.

10. List out the importance of business ethics.

## ESSAY

11. Describe the two world views on Environmental ethics. (8)

12. Explain the different types of issues in computer ethics? (6)

13. Explain the features advantages and limitations of MNCs? (14)

14. Discuss in detail about the moral and ethical issues involved in the use of computers and internet with examples. (14)

15. Discuss the following in detail

a) Engineers as Consultants b) Engineers as expert witness (14)

16. Explain the characteristics of Business ethics? (7)

17. Explain the role of computers in technological development? (7)

18. Explain the advantages & limitations of MNCs? (14)

19. Explain human centred Environmental ethics with nature centred ethics. (7)

20. Explain the different types of issues in computer ethics? (7)

21. Discuss about role of engineers as expert witness. (7)

22. What are the various conflict situations faced by a project manager managing a work site? (7)

23. Evaluate the technology transfer & appropriate technology. (8)

24. Discuss about computer & internet ethics. (6)

25. Investigate the causes and effect of acid rain with a case study. (8)

26. Conclude the features of ecocentric & Biocentric ethics. (6)

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**UNIVERSITY QUESTIONS: MODULE 5**