

III/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION			
April, 2018	Computer Science & Engineering		
Fourth Semester	Professional Ethics and Human Values		
Time: Three Hours	Maximum : 60 Marks		
Answer Question No.1 compulsorily.		(1X12 = 12 Marks)	
Answer ONE question from each unit.		(4X12=48 Marks)	
SCHEME			

- a) Define morals and values.

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

A value is defined as a principle that promotes well-being or prevents harm.” Another definition is: Values are our guidelines for our success—our paradigm about what is acceptable.”

- b) Write a short note on Caring and Sharing?

Caring: Caring is feeling for others. It is a process which exhibits the interest in, and support for, the welfare of others with fairness, impartiality and justice in all activities, among the employees, in the context of professional ethics.

Sharing: Sharing is a process that describes the transfer of knowledge (teaching, learning, and information), experience (training), commodities (material possession) and facilities with others.

- c) What is meant by standard experiment?

The standard experiment is usually executed in partial ignorance. Uncertainties exist in the model assumed. The final outcomes of projects are also uncertain, as in experiments. Monitoring continually the progress and gaining new knowledge are needed before, during, and after execution of project as in the case of experimentation.

OR

In standard experiments, members for study are selected into two groups namely A and B at random. Group A are given special treatment. The group B is given no treatment and is called the ‘controlled group’. But they are placed in the same environment as the other group A.

- d) What are cross cultural issues?

Cross-cultural misunderstandings or conflict may arise whenever there are cultural differences. The following are some potential causes or situations in which conflicts or misunderstandings can happen:

misunderstandings or conflict between different nationalities, religious or ethnic groups.

e) Explain briefly Gilligan's theory?

According to Gilligan's studies, men had a tendency to solve problems by applying abstract moral principles. Men were found to resolve moral dilemma by choosing the most important moral rule, overriding other rules. In contrast, women gave importance to preserve personal relationships with all the people involved. The context oriented emphasis on maintaining personal relationships was called the ethics of care, in contrast with the ethics of rules and rights adopted by men.

f) Define compromise and integrity.

Compromise: MNCs may adopt ethical rationalism (contextualism) as a compromise. Moral judgments are made in relation to the factors prevailing locally, without framing rigid rules.

Integrity: The quality of being honest and having strong moral principles.

g) What is meant by Whistle blowing?

process by which an employee conveys information about a significant moral problem to a person in a position to take action on the problem, outside the approved organizational channel.

h) What are professional responsibilities?

Professional responsibility are confidentiality and proprietary information

i) What is meant by voluntary risk?

Voluntary risk is the involvement of people in risky actions, although they know that these actions are unsafe. The people take these actions for thrill, amusement or fun. They also believe that they have full control over their actions (including the outcomes!) and Equipments or animals handled, e.g., people participate in car racing and risky stunts.

j) How to make the environment suitable to live?

To establish a green and safe environment, pollution free, corruption free, and to follow ethical principles. People are said to have the right to breathe in fresh air, by not allowing smoking in public.

k) When is a 'gift' or a 'bribe'?

Gift: Gifts

<i>Tests</i>	Bribe	Gift
Timing	Given before	Given after
Cost of item	Large amount	Small amount, articles of daily use
Quality of product	Poor	Good/High
Giver is a friend	Yes	No

Transparency	Made in secret	Made in Open
Consequences on organization's goodwill	Damage the good will and reputation	No damage involved

Write any 2 to 3 reasons for 1 mark*

- 1) What is the full form of "IPR"?

Intellectual Property Rights: It is the information and original expression that derives its original value from creative ideas, and is with a commercial value.

UNIT I

2. Explain Engineering Ethics.

12M

Engineering ethics is defined by the codes and standards of conduct endorsed by engineering (professional) societies with respect to the particular set of beliefs, attitudes and habits displayed by the individual or group. Another important goal of engineering ethics is the discovery of the set of justified moral principles of obligation, rights and ideals that ought to be endorsed by the engineers and apply them to concrete situations. Engineering is the largest profession and the decisions and actions of engineers affect all of us in almost all areas of our lives, namely public safety, health, and welfare.

Scope:

The scope of engineering ethics are twofold:

1. Ethics of the workplace which involves the co-workers and employees in an organization.
2. Ethics related to the product or work which involves the transportation, warehousing, and use, besides the safety of the end product and the environment outside the factory.

Senses of engineering ethics:

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

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

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

(OR)

3. Explain Kohlberg's theory and Gilligan's theory.

12M

Kohlberg Theory

Moral development in human being occurs overage and experience. Kohlberg suggested there are three levels of moral development, namely pre-conventional, conventional, and post-conventional, based on the type of

reasoning and motivation of the individuals in response to moral questions. In the pre-conventional level, right conduct for an individual is regarded as whatever directly benefits oneself. At this level, individuals are motivated by obedience or the desire to avoid punishment or to satisfy their own needs or by the influence by power on them. All young children exhibit this tendency. At the conventional level, people respect the law and authority. Rules and norms of one's family or group or society is accepted, as the standard of morality. Individuals in this level want to please or satisfy, and get approval by others and to meet the expectations of the society, rather than their self-interest (e.g., good boy, good girl). Loyalty is regarded as most important. Many adults do not go beyond this level. At the post-conventional level, people are called *autonomous*. They think originally and want to live by universally good principles and welfare of others. They have no self-interest. They live by principled conscience. They follow the golden rule, 'Do unto others as you would have them do unto you'. They maintain moral integrity, self-respect and respect for others. Kohlberg believed that individuals could only progress through these stages, one stage at a time. He believed that most of the moral development occurs through social interactions.

2. Gilligan's Theory

Carol Gilligan found that Kohlberg's theory had a strong male bias. According to Gilligan's studies, men had a tendency to solve problems by applying abstract moral principles. Men were found to resolve moral dilemma by choosing the most important moral rule, overriding other rules. In contrast, women gave importance to preserve personal relationships with all the people involved. The context oriented emphasis on maintaining personal relationships was called the *ethics of care*, in contrast with the *ethics of rules and rights* adopted by men. Gilligan revised the three levels of moral development of Kohlberg, as stages of growth towards ethics of caring. The pre-conventional level, which is same as that of Kohlberg's first one, right conduct, is viewed in a selfish manner solely as what is good for oneself. The second level called *conventional level*, the importance is on not hurting others, and willing to sacrifice one's own interest and help others. This is the characteristic feature of women. At the post-conventional level, a reasoned balance is found between caring about others and pursuing the self-interest. The balance one's own need and the needs of others, is aimed while maintaining relationship based on mutual caring. This is achieved by context-oriented reasoning, rather than by hierarchy of rules.

<i>Kohlberg's Theory</i>	<i>Carol Gilligan's Theory</i>
1. Is based on the study on men.	Is based on the study on men and women
2. Men give importance to moral rule.	Women always want to keep up the personal relationships with all the persons Involved in the situations.
3. Ethics of rules and rights.	Women give attention to circumstances leading to critical situations rather than rules

UNIT II

4. Describe in detail the concept of 'Risk-Benefit analysis and reducing risk'. 12M

Risk-Benefit Analysis:

The major reasons for the analysis of the risk benefit are:

- 1 To know risks and benefits and weigh them each
- 2 To decide on designs, advisability of product/project
- 3 To suggest and modify the design so that the risks are eliminated or reduced

There are some limitations that exist in the risk-benefit analysis. The economic and ethical limitations are presented as follows:

1. Primarily the benefits may go to one group and risks may go to another group. Is it ethically correct?
2. Is an individual or government empowered to impose a risk on some one else on behalf of supposed benefit to some body else? Sometimes, people who are exposed to maximum risks may get only the minimum benefits. In such cases, there is even violation of rights.
3. The units for comparison are not the same, e.g., commissioning the express highways may add a few highway deaths versus faster and comfortable travel for several commuters. The benefits may be in terms of fuel, money and time saved, but lives of human being sacrificed. How do we then compare properly?
4. Both risks and benefits lie in the future. The quantitative estimation of the future benefits, using the discounted present value (which may fluctuate), may not be correct and sometime misleading.

Reducing Risk:

Several Techniques adopted to reduce the risks in a product or process are listed as follows:

1. Application of inherent safety concepts and design. Eg. LPG cylinder is provided with frame to protect the valve while handling and facilitate cryogenic storage.
2. Use of redundancy principle in the instrument protection /design.
3. Periodical monitoring (inspection) and testing of safety system to ensure reliability, e.g., fire extinguishers, 'earth' system in electric circuits are checked periodically.
4. Issue of operation manuals, training of the operating personnel and regular audits are adopted to ensure that the procedures are understood, followed and the systems are kept in working condition.
5. Development of well-designed emergency evacuation plan and regular rehearsal/drills to ensure preparedness, in case of emergency.

(OR)

5. Explain the rights and responsibilities of an Engineer. 12M

Rights: Employee rights are the moral and legal rights that are obtained by the status of being an employee. The provisions made to the employees under this category are:

1. Professional rights (discussed already)
2. Basic human rights (discussed already)
3. Institutional rights or contractual employee rights. This includes the rights to the institution due to the organisational policies or contracts, right to receive specified salary and annual increments, and profit sharing. The quantum of such benefits, scale of pay etc. are fixed and reviewed periodically by the employer and employees.
4. Non-contractual employee rights: These are the rights provided in common, besides the contractual ones. They include:

1. Right to Privacy

It is the right to control the access to and use of information about oneself. This right is limited in certain situations by employers' rights. But who among the employers can access the personal information is again restricted. Only duly authorized persons can get the personal information.

2. Right to Choose Outside Activities

This is also interpreted as a right to personal privacy as that means a right to have a private life outside the job. There are some situations when this right can be curbed.

3. Right to Equal Opportunity—Non-discrimination

4. Right to Equal Opportunity—Sexual Harassment in the Workplace

Responsibility::Confidentiality

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

Further, the following moral principles also justify the concept of 'confidentiality':

1. Respect for Autonomy It means respecting the freedom and self-determination of individuals and organization to identify

their legitimate control over the personal information of themselves. In the absence of this, they can not keep their privacy and protect their self-interest.

Respect for promises

Trustworthiness

Respect for public welfare

UNIT III

6. a) What are the concepts of livable ethics?

6M

Environmental Ethics:

Environmental ethics is the study of (a) moral issues concerning the environment, and (b) moral perspectives,

beliefs, or attitudes concerning those issues. Engineers in the past are known for their negligence of environment, in their activities. It has become important now that engineers design eco-friendly tools, machines, sustainable products, processes, and projects. These are essential now to (a) ensure protection (safety) of environment (b) prevent the degradation of environment, and (c) slow down the exploitation of the natural resources, so that the future generation can survive. 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 to meet the present needs of people and at the same time ensuring the future generations to meet their needs.

Engineers as experimenters have certain duties towards environmental ethics, namely:

1. Environmental impact assessment: One major but sure and unintended effect of technology is wastage and the resulting pollution of land, water, air and even space. Study how the industry and technology affects the environment.
2. Establish standards: Study and to fix the tolerable and actual pollution levels.
3. Counter measures: Study what the protective or eliminating measures are available for immediate implementation
4. Environmental awareness: Study on how to educate the people on environmental practices, issues, and possible remedies.

b) Technology is disadvantageous in many ways. Express your reasons.

6M

At least 3 disadvantages to write each carries 2 marks

(OR)

7. Explain how engineers can grow as morally creative leaders and the role of professional bodies for such a growth.

12M

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.

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, organizing, 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.

The professional bodies promote and sustain the ethical environment and assist in achieving the ethical goals in the following manner:

1. It creates an environment in a profession, where ethical behavior is the basic criterion.
2. It guides and reminds the person as to how to act, in any given situation.
3. It provides support to the individual, who is being pressurized or tortured by a superior or employer, to behave unethically.
4. 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. These codes of conduct help in employees' awareness of ethical issues, establish, and nurture a strong corporate ethical culture.

UNIT IV

8. a) Explain Bhopal gas tragedy.

6M

Bhopal gas Tragedy is one of the biggest process industry disaster in the world. It occurred on 2-3 December 1984 in BHOPAL. It leads to several thousand deaths and more than 500,000 people being exposed to MIC and other hazardous chemicals and causing a disaster which is sometimes referred to as the world's worst industrial disaster. In this paper author provides a case study on Bhopal gas tragedy. Author also finds the reasons and suggested the measures so that such kind of event should not happen again.

On the night of 2nd-3rd December, methyl isocyanate (MIC) a deadly gas leaked over the city of Bhopal from the plant of union carbide India limited(UCIL) at Bhopal, Madhya Pradesh which manufactured pesticides. It

leads to several thousand deaths and more than 500,000 people being exposed to MIC and other hazardous chemicals and causing a disaster which is sometimes referred to as the world's worst industrial disaster.

The chemical spill turned the UCIL factory into a gas chamber. The people were running, dying, vomiting. The city ran out of cremation grounds. The government had no idea on how to help the affected people. The plant was controlled by UCIL which is a subsidiary of the used based company UCC (Union Carbide Corporation), which provided negligible help to deal with the ongoing tragedy.

The main problem was nobody knew anything about its antidote or how to treat the toxin. The disaster resulted in people suffering from ailments such as anemia, tuberculosis but nobody could find the complete health effects caused by MIC and how to treat it. The treatment research was even more complicated by the fact that children born to mothers who were exposed to the gas were also the victims of the release.

Another factor which makes it worse is that till date, even after 32 years there has been no closure in the report on what actually caused the disaster. Negligent management and poor maintenance standards being observed caused the routine pipe maintenance to backflow of water into the MIC storage tank triggering the disasters claimed by the government and the local activists, while at the same time UCC still claims that it was caused by water entering the tank due to some act of sabotage.

b) Write about Chernobyl disaster.

6M

On April 26, 1986 at 1:23 in the morning, reactor number four in the Chernobyl, Ukraine nuclear power plant suffered a melt down which ultimately resulted in the worst man - made disaster in history.

Nearly twenty-five years later, the people and environment of Eastern Europe are still living with the after effects of this devastating event.

The Beginning of the End

Plant workers were conducting a test in reactor number four, when uranium fuel overheated and melted through the protective barrier of the reactor causing an explosion. Amazingly enough, the initial explosion only killed two workers.

As soon as the reactor blew open, radioactive elements such as plutonium and iodine were released in a plume of smoke into the air. Wind picked up this radiation and blew it across Ukraine, Belarus, Russia and parts of western Europe.

At the time of this disaster, Chernobyl was still under the control of the Soviet Union (now Russia) or USSR.

This Communist government was reluctant to admit that they ever had a serious problem - much less a serious nuclear problem at Chernobyl. So they "down-played" the catastrophe.

Instead of evacuating citizens and alerting neighboring countries of the potential harm, the Soviet government sent in local firemen to put out the fire. The firemen were not even told that radiation had been released into the atmosphere.

The Greatest Tragedy

The greatest tragedy of Chernobyl is the legacy of sickness, disease and deformity it left with the children.

Hundreds of children exposed to the radiation have developed cancer and other radiation related illnesses.

Hundreds more children were born malformed due to the radiation exposure of their parents.

Children born mentally impaired. Child with severe malformation.

Chernobyl . . . An Ongoing Tragedy

No one knows for sure exactly how many lives have been lost, how many animals killed, how many acres of land contaminated, how many homes destroyed and how many people's lives totally changed forever due to the explosion at Chernobyl. What we do know, is that the tragedy is on-going. Twenty-three years later, the suffering for both humans and the environment still continues and will likely continue for many years to come.

(OR)

9. Explain importance of codes of ethics.

12M

Institution of Engineers (India)

Engineers serve all members of the community in enhancing their welfare, health, and safety by a creative process utilizing the engineers' knowledge, expertise and experience. The code of ethics is based on broad principles of truth, honesty, justice, trustworthiness, respect and safeguard of human life and welfare, competence and accountability, which constitutes the moral values every corporate member of the institution must recognize uphold and abide by.

Preamble

The corporate members of the IEI are committed to promote and practice the profession of engineering for the common good of the community bearing in mind the following concerns:

1. The ethical standard
2. Social justice, social order, and human rights
3. Protection of the environment
4. Sustainable development
5. Public safety and tranquility

The Tenets of the Code of Ethics

A corporate member

1. shall utilize his/her knowledge and expertise for the welfare, health, and safety of the community without any discrimination for sectional or private interests.
2. shall maintain the honour, integrity and dignity in all his professional actions to be worthy of the trust of the community and the profession.

General Guidance

The tenets of the code of ethics are based on the recognition that-

1. A common tie exists among the humanity and that the Institution of Engineers (India) derives its value from the people, so that the actions of its corporate members should indicate the member's highest regard for equality of opportunity, social justice and fairness
2. The corporate members of the institution hold a privileged position in the community so as to make it a necessity for their not using the position for personal and sectional interests.

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