

**K.S.R. COLLEGE OF ENGINEERING : TIRUCHENGODE - 637 215**

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

(REGULATIONS 2016)

**1. Vision of the Department / Programme: (Electrical and Electronics Engineering)**

DV We envision a Department that leads in the field of Electrical and Electronics Engineering through education, training and research committed to influence the direction of the field and make a constructive contribution to society wherein the Department can thrive and grow.

**2. Mission of the Department / Programme: (Electrical and Electronics Engineering)**

DM 1 To create professionally competent and resourceful Electrical and Electronics Engineers.  
DM 2 To promote excellence in teaching, pioneering research and innovation for a sustainable growth of the nation and enrichment of humanity.

**3. Programme Educational Objectives (PEOs) : (Electrical and Electronics Engineering)**

**The graduates of the programme will be able to**

PEO 1 Excel in professional career and/or higher education by acquiring knowledge in basic engineering, science and mathematics in Electrical and Electronics Engineering.  
PEO 2 Develop and apply engineering solutions for solving contemporary social and human issues with realistic constraints through modern tools.  
PEO 3 Exhibit professional and ethical standards, effective communication skills, teamwork spirit and multidisciplinary approach for successful careers in Indian and Multinational companies and to engage in lifelong learning.

#### 4. Programme Outcomes (POs) of B.E. - Electrical and Electronics Engineering

<b>PO1</b>	<b>Engineering Graduates will be able to:</b> <b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO3</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
<b>PO4</b>	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
<b>PO5</b>	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resource, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
<b>PO6</b>	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
<b>PO7</b>	<b>Environmental and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
<b>PO8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader diverse teams, and in multidisciplinary settings.
<b>PO10</b>	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
<b>PO11</b>	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
<b>PO12</b>	<b>Life-long learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadcast context of technological change.
<b>PSO1</b>	<b>Professional Skill:</b> Realize the generation, transmission, distribution and utilization of electrical power.
<b>PSO2</b>	<b>Testing:</b> Formulate the testing procedures needed to make the measurements of electrical and electromagnetic quantities and to provide solution to the current real time problems.



L23	Risk Benefit Analysis	„	221-245
L24	Risk Benefit Analysis	„	221-245
L25	Reducing Risk	„	382-389
L26	The Chernobyl and Bhopal Case Studies.	„	395-405
L27	The Chernobyl and Bhopal Case Studies.		395-405
<b>Unit-4 RESPONSIBILITIES AND RIGHTS</b>			
L28	Collegiality and Loyalty	„	331-351
L29	Respect for Authority	„	331-351
L30	Collective Bargaining	„	331-351
L31	Confidentiality	„	331-351
L32	Conflicts of Interest	„	361-378
L33	Occupational Crime	„	361-378
L34	Professional Rights	„	378-379
L35	Employee Rights	„	379-361
L36	Intellectual Property Rights (IPR) - Discrimination.	„	361-378
<b>Unit-5 GLOBAL ISSUES</b>			
L37	Multinational Corporations	„	224-226
L38	Environmental Ethics	„	226-228
L39	Computer Ethics	„	228-230
L40	Weapons Development	„	230-231
L41	Engineers as Managers	„	232-234
L42	Consulting Engineers	„	234-237
L43	Engineers as Expert Witnesses and Advisors	„	238-240
L44	Honest - Moral Leadership	„	241-242
L45	Sample Code of Conduct.	„	242-243

**K.S.R. COLLEGE OF ENGINEERING**  
**(Autonomous)**  
**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**PROFESSIONAL ETHICS**  
**2 MARKS QUESTIONS AND ANSWERS**  
**UNIT – I**

**1. What are human values?(Remembering)**

Values decide the standard of behavior. Some universally accepted values are freedom Justice and equality. Other principles of values are love, care, honesty, integrity, self respect.

**2. What are ethical values? (Remembering)**

- Trustworthiness,
- Respect,
- Responsibility,
- Fairness,
- Caring is ethical values

**3. Distinguish values from ethics and culture. (Understanding)**

Values are mainly related to individuals and since they are related to justice, they remain the same for every one. E.g. truth, honesty, empathy, self respect. Values do not change from individual to individual. Ethics is common to a group of individuals; the group may be religious or professional . Ethics is mostly based on some code or law and judgment of any action is based on code of conduct or law. Ethics change from individual to individual Culture commonly refers to conduct of a group. E.g. system of worship, It may differ from society to society, nation to nation or religion to religion.

**4. What is integrity? (Remembering)**

Integrity is the unity of character based on moral values. Consistency in attitudes, emotions and conduct in relations to morally justified actions and values are also the part of integrity of individual. It implies honesty, trustworthiness.

**5. Define work ethics. (Remembering)**

By one 's work one cannot harm others. Any worker cannot escape accountability. Worker has the moral responsibility to see that no other person's right, private or freedom is impaired or transgressed.

**6. What is service learning? (Remembering)**

Service learning tells that one has moral responsibility to increase the desirable effects and to decrease the harmful effects. Any service should increase the desirable result.

**7. Mention some civic virtues. (Remembering)**

Good citizen demand civic virtue. It is the principle of not harming the surroundings .it also includes living peacefully, respect for others, protecting the environment and being normally and ethically good.

**8. Write short notes on caring and sharing. (Remembering)**

Caring is the essence of moral life. Caring involves feelings, relationship, contends with other persons and protecting others and causing least damage to others.

Sharing means sharing of feelings, ideas thoughts, resources and profits. Sharing is always mutually beneficial. Sharing morally acceptable feelings, resources and materials is a value.

**9. Write notes on honesty. (Remembering)**

Any human being should imbibe honesty -honesty in acts, honesty in speech and honesty in beliefs. Honesty is the fundamental virtue in human relationship even though in may be difficult to follow some times.

**10. What is courage as a value? (Remembering)**

Courage implies self respect and governs confrontations with danger and risk. It is not excessive rashes or cowardice, but it is the middle ground. Taking calculated risks and boldness in facing crises are the hallmarks of courage as a human value. It defines the mental makeup of an individual in taking bold decisions even under adverse situations.

**11. Define co –operation? (Remembering)**

Co -operation means extending help to others, for a good cause. Co -operation may be through an idea, a suggestion, an assistance or physical work which extends to others for common benefit.

**12. Define empathy. (Remembering)**

Empathy means putting self in a position of someone else and thinking as the later and reasoning suitable action.

**13. Define spirituality. (Remembering)**

Spirituality raises a man above the materialistic world into a realm where he seeks peace and real happiness.

**14. Define Integrity. (Remembering)**

Integrity is the bridge between responsibility in private and professional life.

**15. Define Compromise. (Remembering)**

In a negative sense it means to undetermined integrity by violating one 's fundamental moral principles. In a positive sense, however, it means to settle differences by mutual concessions or to reconcile conflicts through adjustments in attitude and conduct.

**16. Give the two aspects of Honesty. (Remembering)**

Truthfulness – meeting responsibilities concerning truth -telling. Trustworthiness – Meeting responsibilities concerning trust.

**17. Differentiate Self -respect and Self –esteem. (Understanding)**

Self-respect: It is a moral concept; refers to the virtue properly valuing oneself.

Self-esteem: It is a psychological concept; means having a positive attitude toward oneself, even if the attitude is excessive or otherwise unwarranted.

**18. Write short notes on courage, co -operation. (Remembering)**

Courage is the tendency to face dangers and difficult jobs in rational ways and with self control. A person with the quality of courage has the following characteristics. Continues to run with his job or business even there are certain disturbance. Gets involved with new popular ideas Discuss with others even when there is a problem.

**Co -operation:**

Co -operation means extending help to others, for a good cause. Co -operation may be through an idea, a suggestion, an assistance or physical work which extends to others for common benefit.

**19. What is service learning? (Remembering)**

Differentiate service learning from civic virtue. Service learning tells that one has moral responsibility to increase the desirable effects and to decrease the harmful effects. Any service should increase the desirable result. Good citizen demand civic virtue. It is the principle of not harming the surroundings .It also includes living peacefully, respect for others, protecting the environment and being normally and ethically good.

**20. Define the terms Values, Morals & Ethics. (Remembering)**

**Values are rules.** Values are the rules by which we make decisions about right and wrong, should and shouldn't, good and bad. They also tell us which are more or less important, which is useful when we have to trade off meeting one value over another. Morals are how we judge others.

**Morals** have a greater social element to values and tend to have a very broad acceptance. Morals are far more about good and bad than other values. We thus judge others more strongly on morals than values. A person can be described as immoral, yet there is no word for them not following values. Morality can be described as a core set of values and beliefs that act as a guide when formulating courses of action.

**Ethics** are professional standards. Ethics are thus internally defined and adopted, whilst morals tend to be externally imposed on other people. Ethics is the branch of philosophy concerned with human values and conduct, moral duty, and obligation. Basically, ethics is concerned with what people might describe as right and wrong human conduct.

**21. Define Human Values. (Remembering)**

Human values are the foundation of social order, justice and progress. Human values are social and ethical norms common to all cultures and societies, as well as religions. They represent a melding of social progress and spiritual growth. *Timeless Human Values*

## UNIT - II

### 1. Define Ethics. (Remembering)

- \* Study of right or wrong.
- \* Good and evil.
- \* Obligations & rights.
- \* Justice.
- \* Social & Political deals.

### 2. Define Engineering Ethics. (Remembering)

- \* Study of the moral issues and decisions confronting individuals and organizations engaged in engineering / profession.
- \* Study of related questions about the moral ideals, character, policies and relationships of people and corporations involved in technological activity.
- \* Moral standards / values and system of morals.

### 3. What is the need to study Ethics ? (Remembering)

- To responsibly confront moral issues raised by technological activity.
- To recognize and resolve moral dilemma.
- To achieve moral autonomy.

### 4. Differentiate Moral and Ethics .(Understanding)

#### MORAL:

- Refers only to personal behavior.
- Refers to any aspect of human action
- Social conventions about right or wrong conduct.

#### ETHICS :

- Involves defining, analyzing, evaluating and resolving moral problems and developing moral criteria to guide human behavior.
- Critical reflection on what one does and why one does it.
- Refers only to professional behavior.

### 5. What is the method used to solve an Ethical problem? (Remembering)

Recognizing a problem or its need. Gathering information and defining the problem to be solved or goal to be achieved. Generating alternative solutions or methods to achieve the goal. Evaluate benefits and costs of alternate solutions. Decision making & optimization. Implementing the best solution.

### 6. What are the Senses of Engineering Ethics? (Remembering)

- o An activity and area of inquiry.
- o Ethical problems, issues and controversies.
- o Ethical problems, issues and controversies. o Particular set of beliefs, attitudes and habits.
- o Morally correct.

### 7. Differentiate Micro -ethics and Macro -ethics . (Understanding)

Micro -ethics : Deals about some typical and everyday problems which play an important role in the field of engineering and in the profession of an engineer. Macro -ethics : Deals with all the societal problems which are unknown and suddenly burst out on a regional or national level.

**8. What are the three types of Inquiry? (Remembering)**

Normative Inquiry – Based on values .

Conceptual Inquiry – Based on meaning.

Factual Inquiry – Based in facts.

**9. What are the steps in confronting Moral Dilemmas? (Remembering)**

- Identify the relevant moral factors and reasons.
- Gather all available facts that are pertinent to the moral factors involved.
- Rank the moral considerations in order of importance as they apply to the situation.
- Consider alternative courses of actions as ways of resolving dilemma, tracing the full implications of each.
- Get suggestions and alternative perspectives on the dilemma. By weighing all the relevant moral factors and reasons in light of the facts, produce a reasoned judgment.

**10. Define Moral Autonomy. (Remembering)**

Exercised based on the moral concern for other people and recognition of good moral reasons.

**11. Give the importance of Lawrence Kohlberg’s and Carol Gilligan ’s theory. (Remembering)**

Kohlberg gives greater emphasis to recognizing rights and abstract universal rules.

Gilligan stresses the importance of maintaining personal relationships based on mutual caring.

**12. Give the need for Authority. (Remembering)**

Authority provides the framework in which learning can take place.

**13. What are the criteria required for a Profession? (Remembering)**

- o Knowledge
- o Organization
- o Public Good

**14. Give the general criteria to become a Professional engineer. (Remembering)**

Attaining standards of achievement in education, job performance or creativity in engineering that distinguish engineers from engineering technicians and technologists. Accepting as part of their professional obligations as least the most basic moral responsibilities to the public as well as to their employers, clients, colleagues and subordinates.

**15. Define Integrity. (Remembering)**

Integrity is the bridge between responsibility in private and professional life.

**16. Define Compromise. (Remembering)**

In a negative sense it means to undetermined integrity by violating one ’s fundamental moral principles. In a positive sense, however, it means to settle differences by mutual concessions or to reconcile conflicts through adjustments in attitude and conduct.

**17. Give the two aspects of Honesty. (Understanding)**

- o Truthfulness – meeting responsibilities concerning truth -telling.
- o Trustworthiness – Meeting responsibilities concerning trust.

**18. Differentiate Self -respect and Self –esteem. (Understanding)**

Self-respect : It is a moral concept; refers to the virtue properly valuing oneself.

Self-esteem : It is a psychological concept; means having a positive attitude toward oneself, even if the attitude is excessive or otherwise unwarranted.

**19. What are the two forms of Self -respect? (Remembering)**

- a. Recognition self -respect
- b. Appraisal self

**20. What are the senses of Responsibility? (Understanding)**

- a. a virtue
- b. obligations
- c. general moral capacities of people
- d. liabilities and accountability for actions
- e. blameworthiness or praise worthiness

**21. When will you tell an Act as an involuntary one? (Understanding)**

- Act done in ignorance
- Act performed under compulsion

**22. What are the types of Theories about Morality? (Remembering)**

- o Virtue ethics – Virtues and vices
- o Utilitarianism – Most good for the most people
- o Duty ethics – Duties to respect people
- o Rights ethics – Human rights

**23. Differentiate Hypothetical imperatives and Moral imperatives. (Understanding)**

Hypothetical imperatives are based on some conditions whereas Moral imperatives wont based on some condition.

**24. State Rawl 's principles? (Remembering)**

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

**25. Differentiate Ethical Relativism and Ethical Egoism. (Understanding)**

Ethical egoism – the view that right action consist in producing one 's own good.

Ethical relativism – the view that right action is merely what the law and customs of one 's society require.

**26. Define Ethical Pluralism. (Remembering)**

Ethical pluralism is the view that there may be alternative moral perspectives that are reasonable, but no one of which must be accepted completely by all rational and morally concerned persons.

**27. Define Religion. (Remembering)**

A religion is any set of articles of faith together with the observances, attitudes, obligations and feelings tied up therewith, which, in so far as it is influential in a person, tends to perform two functions, one social and the other personal.

**28. Give the uses of Ethical Theories? (Remembering)**

o In understanding moral dilemmas o Justifying professional obligations and ideals o Relating ordinary and professional morality.

**29. What are personal ethics and business Ethics? (Remembering)**

Personal ethics deals with how we treat others in our day - to - day Business ethics deals with the desired norms of behavior that pertain to transactions.

**30. What do you mean by normative Ethics? (Remembering)**

Normative ethics deals with the professional codes of ethics that specify role norms or obligations that professions attempt to enforce. It is the recommendations of standards and guidelines for morally right or good behavior .

**31. What is descriptive ethics or non-normative Ethics? (Remembering)**

Descriptive ethics deals with the factual investigation of moral behavior and beliefs ie., the study not of what people ought to do but how they reason and how they act.

**32. What do you mean by ethical subjectivism? (Remembering)**

Ethical subjectivism argues that what is ethically right or wrong for the individual depends on the ethical principles he/she has chosen. In other words, for people who subscribe to ethical subjectivism what is ethically right or wrong is entirely a personnel matter.

**33. What is tacit-ethic and Meta -ethics ? (Remembering)**

- Tacit ethic deals with the unsaid or unspoken rule of practice.
- Meta-ethics deals with theories about ethics.

**34. What is moral autonomy? (Remembering)**

Moral autonomy can be viewed as the skill and habit of thinking rationally about ethical issues on the basis of moral concern .

**35. What do you mean by a sociopath? (Remembering)**

Sociopath lack a sense of moral concern and guilt, and can never be morally autonomous no matter how independent their intellectual reasoning about ethics maybe.

**36. What are the attributes to a profession? (Remembering)**

The attributes to a profession are:

- \*Knowledge
- \*Organization
- \*Public good

**37. What are the two models of a professional society? (Remembering)**

The two models of a professional society are:

- \*Social contract model
- \*Business model

## UNIT – III

### 1. What are the conditions required to define a valid consent? (Remembering)

The consent was given voluntarily. The consent was based on the information that rational person would want, together with any other information requested, presented to them in understandable form. The consent was competent to process the information and make rational decisions.

### 2. What are the two main elements which are included to understand informed consent? (Remembering)

Informed Consent is understood as including two main elements:

- i. Knowledge [Subjects should be given not only the information they request, but all the information needed to make a reasonable decision].
- ii. Voluntariness [Subjects must enter into the experiment without being subjected to force, fraud, or deception].

### 3. What are the general features of morally responsible engineers? (Remembering)

- a. Conscientiousness.
- b. Comprehensive perspective.
- c. Autonomy.
- d. Accountability.

### 4. What is the purpose of various types of standards? (Remembering)

- a. Accuracy in measurement, interchangeability, ease of handling.
- b. Prevention of injury, death and loss of income or property.
- c. Fair value of price.
- d. Freedom from interference.
- e. Competence in carrying out tasks.
- f. Sound design, ease of communications.

### 5. Define Code. (Remembering)

Code is a set of standards and laws. 6. Enumerate the roles of codes?

- |                                      |  |
|--------------------------------------|--|
| _ Inspiration and Guidance           | _ Protecting the Status Quo                    |
| _ Support                            | _ Promoting Business Interests                 |
| _ Deterrence and Discipline          |  |
| _ Education and Mutual Understanding | _ Contributing to the Professions Public Image |

### 7. Give the limitations of codes. (Remembering)

Codes are restricted to general and vague wording.

Codes can't give a solution or method for solving the internal conflicts. 1 Codes cannot serve as the final moral authority for conduct.

Codes can be reproduced in a very rapid manner.

### 8. What are the problems with the law in engineering? (Remembering)

- a. Minimal compliance
- b. Many laws are without enforceable sanctions.

**9. Differentiate scientific experiments and engineering projects. (Understanding)**

Scientific experiments are conducted to gain new knowledge, while “engineering projects are experiments that are not necessarily designed to produce very much knowledge.

**10. What are the uncertainties occur in the model designs? (Remembering)**

- a. Model used for the design calculations.
- b. Exact characteristics of the materials purchased.
- c. Constancies of materials used for processing and fabrication.
- d. Nature of the pressure, the finished product will encounter.

**11. Comment on the importance of learning from the past. (Understanding)**

Using Titanic disaster, as an example The *Titanic* lacked a sufficient number of lifeboats.

**12. Comment on the importance of learning from the past, using the nuclear reactor accident at Three Mile Island, as an example? (Understanding)**

Valves are notorious for being among the least reliable components of hydraulic systems. It was a pressure relief valve, and lack of definitive information regarding its open or shut state. Similar Malfunctions had occurred with the identical valves on nuclear reactors because of the same reasons at other locations, but no attention had been given to them.

**13. Are SRBs inherently too dangerous to use on manned spacecraft? If so, why are they part of the design? (Understanding)**

Yes, since they have the disadvantage that once the fuel is lit, there is no way to turn the booster off or even to control the amount of thrust produced. SRBs were used instead of safer liquid fueled boosters because they required a much smaller research -and-development effort. Numerous other design changes were made to reduce the level of research and development required.

**14. Under what conditions would you say it is safe to launch a shuttle without an escape mechanism for the crew? (Understanding)**

- Design specifications \_ 31 0 F
- Have given valid consent
- Instead of rubber, steel billets for O -rings
- Liquid fueled boosters instead of Solid rocket boosters

**15. Define Ethical Conventionalism. (Remembering)**

Ethical conventionalism is the view that a particular set of conventions, customs, or laws is self-certifying and not to be questioned as long as it is the set in force at a given time or for a given place.

## UNIT - IV

### 1. Define Risk. (Remembering)

A risk is the potential that something unwanted and harmful may occur.

$$\text{Risk} = \text{Probability} \times \text{Consequences.}$$

### 2. Define a Disaster. (Remembering)

A DISASTER = A seriously disruptive event + A state of unpreparedness.

### 3. Give the criteria which helps to ensure a safety design. (Remembering)

The minimum requirement is that a design must comply with the applicable laws. An acceptable design must meet the standard of “accepted engineering practice. Alternative designs that are potentially safer must be explored. Engineer must attempt to foresee potential misuses of the product by the consumer and must design to avoid these problems. Once the product is designed, both the prototypes and finished devices must be rigorously tested.

### 4. What are the factors for safety and risk? (Remembering)

- Voluntary and Involuntary risk
- Short-term and Long -term risk
- Expected probability
- Reversible effects
- Threshold levels to risk
- Delayed or Immediate risk etc

### 5. Give the categories of Risk. (Remembering)

- Low consequence, Low probability (which can be ignored) Low consequence, High probability
- High consequence, Low probability
- High consequence, High probability

### 6. What are the factors that affect Risk Acceptability? (Remembering)

- Voluntarism and control
- Effect of information on risk assessment
- Magnitude and proximity of the people facing risk
- Job related pressures

### 7. What is the knowledge required to assess the risk? (Remembering)

- Data in design
- Uncertainties in design

### 8. What are the three conditions referred as safe exit? (Remembering)

Assure when a product fails it will fail safely. Assure that the product can be abandoned safely. Assure that the user can safely escape the product.

### 9. How will an engineer assess the safety? (Remembering)

The risks connected to a project or product must be identified. The purposes of the project or product must be identified and ranked in importance. Costs of reducing risks must be estimated. The costs must be weighed against both organizational goals and degrees of acceptability of risks to clients and the public. The project or product must be tested and then either carried out or manufactured.

**10. What are the reasons for Risk -Benefit Analysis? (Remembering)**

- i. Risk -benefit analysis is concerned with the advisability of undertaking a project.
- ii. It helps in deciding which design has greater advantages.
- iii. It assists the engineers to identify a particular design scores higher with that of the

**11. Are the engineers responsible to educate the public for safe operation of the equipment? How? (Remembering)**

Yes, as per the engineers are concerned with they should have their duty as to protect for the safety and well being of the general public. Analyzing the risk and safety aspects of their designs can do this.

**12. Define Safety. (Remembering)**

In the definition stated by William W. Lawrence safety is defined, as a thing is safe if its risks are acceptable. A thing is safe with respect to a given person or group, at a given time, if its risk is fully known, if those risks would be judged acceptable, in light of settled value principles. In the view of objective, safety is a matter of how people would find risks acceptable or Unacceptable.

**13. What is the definition of risks? (Remembering)**

A risk is the potential that something unwanted and harmful may occur. Risk is the possibility of suffering harm or loss. It is also defined as the probability of a specified level of hazardous consequences, being realized. Hence Risk (R) is the product of Probability (P) and consequence(C).

**14. What are the positive uncertainties in determining risks? (Remembering)**

There are three positive uncertainties. They are:

- a. Purpose of designing
- b. Application of the product
- c. Materials and the skill used for producing the product.

**15. Define Risk-Benefit Analysis. (Remembering)**

Risk benefit analysis is a method that helps the engineers to analyze the risk in a project and to determine whether a project should be implemented or not. In risk benefit analysis, the risks and benefits of a product are allotted to money amounts, and the most benefit able ratio between risks and benefits is calculated.

**16. What does Strict Liability mean? (Remembering)**

Strict liability means if the sold product is defective; the manufacturer concerned is liable for any harm that results to users. Negligible is not at all an issue based.

**17. Give the reasons for the Three Mile Island disaster. (Understanding)**

- i. Inadequate training to the operators.
- ii. Use of B & W reactors.

**18. What is the main barrier to educational attempts? (Remembering)**

An important barrier to educational attempt is that people belief change slow and are extraordinarily resistant to new information.

**19. What happens to the products that are not safe? (Remembering)**

Products that are not safe incur secondary costs to the manufacturer beyond the primary costs that must also be taken into account costs associated with warranty expenses, loss of customer will and even loss of customers and so.

**20. What does Open -mindedness refer to? (Remembering)**

Open -mindedness refers once again not allowing a preoccupation with rules to prevent close examination of safety problems that may not be covered by rules.

## UNIT – IV

### **1. Define Collegiality. (Remembering)**

Collegiality is a kind of connectedness grounded in respect for professional and in a commitment to the goals and values of the profession and collegiality includes a disposition to support and cooperate with one 's colleagues.

### **2. What are the central elements of collegiality? (Remembering)**

- i. Respect
- ii. Commitment
- iii. Connectedness
- iv. Cooperation

### **3. What are the two senses of Loyalty? (Remembering)**

- i. Agency Loyalty – Acting to fulfill one 's contractual duties to an employer. It matter of actions, whatever its motives.
- ii. Identification Loyalty – Has as much as to do with attitudes, emotions, and a sense of personal identity as it does with actions.

### **4. When may an Identification Loyalty be said as obligatory? (Remembering)**

- i. Employees must see some of their own important goals as met by and through a group in which they participate.
- ii. Employees must be treated fairly, each receiving his or her share of benefits and burdens.

### **5. What is the relationship between the Loyalty to the company and Professional responsibility to the public? (Remembering)**

- i. Acting on professional commitments to the public can be a more effective way to serve a company than a mere willingness to follow company orders.
- ii. Loyalty to companies or their current owners should not be equated with merely obeying one's immediate supervisor.
- iii. An engineer might have professional obligations to both an employer and to the public that reinforce rather than contradict each other.

### **6. Define Institutional Authority. (Remembering)**

Institutional Authority is acquired, exercised and defined within organizations. It may be defined as the institutional right given to a person to exercise power based on the resources of the institution.

### **7. Define Expert Authority. (Remembering)**

Expert authority is the possession of special knowledge, skill or competence to perform task or give sound advice.

### **8. What is the basic moral task of salaried engineers? (Remembering)**

The basic moral task of salaried engineers is to be aware of their obligations to obey employers on one hand and to protect and serve the public and clients of the other.

### **9. What are the guidelines to reach an agreement? (Remembering)**

- i. Attack problem and not people.
- ii. Build trust.
- iii. Start with a discussion and analysis of interests, concerns, needs. It begin with interests, not positions or solutions.
- iv. Listen.
- v. Brainstorm; suggesting an idea does not mean one aggress with it. Develop multiple options.
- vi. Use objective criteria whenever possible. Agree on how something will be measured.

**10. Define confidential information. (Remembering)**

Confidential information is information deemed desirable to keep secret.

**11. What are the criteria for identifying that information is “labeled ”confidential at the Workplace? (Remembering)**

- \* Engineers shall treat information coming to them in the course of their as confidential.
- \* Identify any information which if it became known would cause harm to the corporation or client.
- \* Confidential information is any information that the employer or client would like to have kept

**12. What are the terms associated with Confidentiality? (Remembering)**

- i. Privileged Information
- ii. Proprietary Information
- iii. Patents
- iv. Trade secrets

**13. Why does a conflict of interests arise? (Remembering)**

- a. Financial Investments
- b. Insider Trading
- c. Bribe
- d. Gifts
- e. Kickbacks

**14. What is a Bribe? (Remembering)**

A Bribe is a substantial amount of money or goods offered beyond a stated business contract with the aim of winning an advantage in gaining or keeping the contract.

**15. What is a Gift? (Remembering)**

Gifts are not bribes as long as they are small gratuities offered in the normal conduct of business.

**16. What is called Kickbacks? (Remembering)**

Prearranged payments made by contractors to companies or their representatives in exchange for contracts actually granted are called kickbacks.

**17. What are the types of Conflicts of interest? (Remembering)**

- i. Actual conflict of interest
- ii. Potential conflict of interest
- iii. Apparent conflict of interest

**18. How will you solve the Conflict problems?**

- i. Finding the creative middle way.
- ii. Employing Lower-level considerations.
- iii. Making the hard choice.

**19. What is called ‘White -collar crime ’?**

Occupational crimes are illegal acts made possible through one ’s lawful employment. It is the secret violation of laws regulating work activities. When committed by office workers of professionals, occupational crime is called ‘white -collar crime ’.

**20. What are the essential elements of IPR?**

- i. Patents
- ii. Copyrights
- iii. Trademarks
- iv. Trade secrets

**UNIT – V**

**1. What is meant by moral leadership? (Remembering)**

Whenever the goals of a leader become permissible and also morally valuable, it is known as moral leadership. Moral leadership also means that employing morally acceptable ways to motivate the groups to move towards morally desirable ways. The ways are depending on the situations.

**2. What is code of Ethics ? (Remembering)**

- o Code of ethics is a frame work for arriving at good ethical choices.
- o The code of ethics establishes a frame work for ethical judgment for any profession.
- o A code of ethics does not develop new moral principles.

**3. Differentiate eyewitness and expert witness? (Remembering)**

Eye Witnesses Expert Witnesses Eyewitnesses give evidences in the court about what they have seen actually. Expert witnesses are allowed larger freedom in giving evidence on facts in there areas of expertise on explaining facts in commenting on the views of the expert witnesses of the opposite side and also in reporting on the professional interests maintaining confidentiality and expressing concern for the interest of the clients.

**4. What is the need for Honesty? (Remembering)**

Honesty is necessary to avoid deceiving and to be frank in giving all the relevant facts. It is also necessary to be truthful in interpreting the facts. Honesty in technical data is essential to be honest in engineer ’s role and for the values guiding his studies.

**5. What is meant by Competence? (Remembering)**

Competence means being well trained and having proper experience in the relevant field and also having the required additional skills planning and policy making.

**6. What does Diligence mean? (Remembering)**

Diligence means carrying out the given job carefully and in a prompt way.

**7. Define Loyalty. (Remembering)**

Loyalty refers to serving the interests of the clients. It includes avoiding conflicts of interests maintaining confidentiality and expressing concern for the interest of the clients.

**8. What are the different ways to create an ethical climate? (Remembering)**

The following are the ways to create an ethical climate:

- Ethical values must be accepted and appreciated by the managers and employees with its full complicated features.
- The sincere use of ethical language has to be recognized as a justifiable part of the company.
- The management has to create a strong confidence among the employees that the management is more serious about ethics by establishing moral tone in words, in policies and also by personal example.
- The management has to establish some procedures for resolving conflicts.

**9. What are the important forms of conflicts that may arise for an engineering project manager? (Remembering)**

The important forms of conflicts that may arise for an engineering project manager are, Conflicts based on schedules. Conflicts which arises in evolving the importance of projects and the department. Conflicts based on availability of personal for a project. Conflicts over technical matters. Conflicts which arises due to administrative procedure. Conflicts of personality. Conflicts over cost or expenditure.

**10. What are the principles for conflict resolution? (Remembering)**

The following are the principles for conflict resolution: People must be separated from the problem Focus must be only on interest and not on positions Various options must be generated An evolution criteria should be established

**11. Who are referred as consulting engineers? (Remembering)**

Consulting engineers are those involved in private practice. For the services rendered by them, they will be paid some fees. They won't be compensated by salaries from employers. They are the sole employer of their practice. So they have greater freedom to take decisions on the tasks undertaken by them. take decisions on the tasks undertaken by them.

**12. What do you mean by appropriate technology? (Remembering)**

Appropriate technology means identification, transformation and implementation of the most suitable technology for a new set of conditions.

**13. What are the ill effects of acid rain? (Remembering)**

Bacteria's that are essential for life systems to be active are killed. High acidity results in reduced growth and killing of fishes. Vanishing of greenery and destruction of forests. Germination of seeds is affected affecting the growth of trees.

**14. What do you mean by technology transfer? (Remembering)**

Technology transfer is a process of changing the technology to a new setting and implementing it. Technology includes hardware such as machines and installations as well as techniques such as technical, organizational and managerial skills and procedures.

**15. What is computer ethics ? (Remembering)**

Computers contribute to a variety of moral problems. In order to evaluate and act appropriately with such problems, a new field of applied ethics, termed as 'computer ethics' has been developed.

**16. Give any ten commandments of computer ethics . (Remembering)**

- a. Don 't use a computer to harm other people.
- b. Don 't interfere with other people 's computer works.
- c. Don 't snoop around in other people 's computer files.
- d. Don 't use a computer to steal.
- e. Don 't use a computer to bear false witness.

**17. What is hacking? (Remembering)**

When computers are the main objects of an unethical act, it will create some ethical issues. This kind of act is called hacking.

**18. What is autonomous computer? (Remembering)**

The autonomy of computers means the ability of computer to make decisions without the interference of human beings. This autonomous function of computers creates a lot of implication.

**19. Give any ten International rights suggested by Donaldson? (Remembering)**

- The right to freedom of physical movement.
- The right to ownership of property.
- The right to freedom from torture.
- The right to a fair trial.
- The right to nondiscriminatory treatment.
- The right to physical security.
- The right to freedom of speech and association.
- The right to minimal education.
- The right to political participation.
- The right to subsistence.

**20 Give some of the Environmental issues of concern to engineers. (Remembering)**

- a. Releasing harmful substance into air and water.
- b. Using toxic substance in food processing.
- c. Disturbing land and water balances.

**21 What are the issues in Computer Ethics? (Remembering)**

- |                     |                         |                        |
|---------------------|-------------------------|------------------------|
| a. Power            | k. Data and Software    | u. Data Bank Errors    |
| Relationship        | l. Privacy              | v. Hackers             |
| b. Job Elimination  | m. Cyber crimes         | w. Legal Responses     |
| c. Customer         | n. Computer Virus       | x. Professional Issues |
| Relations           | o. Techno stress        | y. Computer Failures   |
| d. Biased Software  | p. Cyber Scams & Frauds | z. Health conditions   |
| e. Stock Trading    | q. Internet Defamation  |                        |
| f. Unrealistic      | r. Software Piracy      |                        |
| Expectations        | s. Cyber Squatting      |                        |
| g. Political Power  | t. Inappropriate Access |                        |
| h. Military Weapons |                         |                        |
| i. Property         |                         |                        |
| j. Embezzlement     |                         |                        |

**22 What are the problems of Defense industry? (Remembering)**

- a) Problem of waste and huge cost in implementing and maintaining a weapons system.
- b) Problem of Technology creep.
- c) Problems in maintaining secrecy.
- d) Every country allocates large amount of its resources to defense sector [India
- e) Pent its resource for defense

**23 What are ways to promote an Ethical climate? (Remembering)**

- a. Ethical values in their full complexity are widely acknowledged and appreciated by managers and employees alike.
- b. The sincere use of ethical language has to be recognized as a legitimate part of corporate dialogue.
- c. The top level management must establish a moral tone in words, in policies, by personal example etc.
- d. The management has to establish some procedures for resolving conflicts.

**24 What are the important forms of Conflicts? (Remembering)**

Conflicts based on schedules Conflicts which arises in evolving the importance of projects and the department. Conflicts based on the availability of personal for a project. Conflicts over technical matters. Conflicts arise due to administrative procedure. Conflicts of personality. Conflicts over cost or expenditure or money.

**25 What are the Principles of Conflicts of interest? (Remembering)**

- \_ Separate people from the problem.
- \_ Focus on interest and not on positions.
- \_ Generate a variety of possibilities before deciding what to do.
- \_ Insist that the result be based on some objective standard.



PART B — (5 × 16 = 80 marks)

11. (a) (i) Bring out the differences between the Kohlberg's theory and Gilligan's theory. (8)  
(ii) Write short notes on moral autonomy. (8)

Or

- (b) (i) Explain the types of inquiries in detail. (8)  
(ii) Mention the different types of ethical theories. What are its uses? (8)

12. (a) (i) Why engineering projects are viewed as experiments? (8)  
(ii) Enumerate the Code of Ethics of engineers. (8)

Or

- (b) (i) Explain the ethical issues involved in Challenger mission case study. (8)  
(ii) Explain work ethics in detail. (8)

13. (a) (i) Define the terms risk and safety. How will an engineer assess the safety? (8)  
(ii) What are the factors that affect risk acceptability? What is the use of knowledge of risk acceptance to engineers? (8)

Or

- (b) Define risk benefit analysis? Why is it conducted? What are the limitations of risk benefit analysis?

14. (a) (i) Write short notes on occupational crime. (8)  
(ii) Distinguish between employee rights and professional rights. (8)

Or

- (b) Discuss the significance of intellectual property rights. Also explain the legislations covering intellectual property rights in India.

15. (a) What is environmental ethics? Why it is important to study. Discuss any environmental issues in the ethical point of view to engineers.

Or

- (b) Define computer ethics. What are the issues in computer ethics?



Reg. No. :

**Question Paper Code : 51503**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Seventh Semester

Electronics and Communication Engineering

GE 2025 / GE 606 / 10177 GE 005 — PROFESSIONAL ETHICS IN  
ENGINEERING / PROFESSIONAL ETHICS AND HUMAN VALUES

(Common to Fifth Semester – Textile Technology / Textile Technology  
(Fashion Technology) and Biotechnology)

(Also common to Sixth Semester – Civil Engineering, Automobile Engineering and  
Electrical and Electronics Engineering)

(Regulation 2008/2010)

(Common to PTGE 2025 – Professional Ethics in Engineering for B.E. (Part-Time)  
Fifth Semester – Civil Engineering and Electrical and Electronics Engineering,  
Seventh Semester – ECE – Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Engineering Ethics.
2. State the uses of ethical theories.
3. What is meant by engineering as experimentation?
4. State the importance of ethical codes.
5. State the industrial definition on safety.
6. What is meant by Disaster?
7. Define the term Collective Bargaining.

8. What is meant by Occupational Crime?
9. What are the normal issues that may arise in Multinational Corporation?
10. Differentiate eye witness and expert witness in the legal system.

PART B — (5 × 16 = 80 marks)

11. (a) What are the general types of inquiries involved in engineering inspection? Explain in detail the specific virtues of professional responsibility. (16)

Or

- (b) (i) Briefly explain the three main levels of moral developments, developed by Kohlberg. (8)
  - (ii) Explain the vital role of consensus and controversy while considering moral autonomy in engineering ethics. (8)
12. (a) (i) Briefly discuss the space shuttle Challenger accident. What are the ethical problems involved in this? (10)
  - (ii) Discuss about Research ethics. (6)

Or

- (b) (i) What is meant by informal consent when bringing an experimental product to the market? (6)
  - (ii) How the ethical codes provide discipline among the engineers? (10)
13. (a) (i) Discuss the notion of safe exit, using evacuation plans for communities near nuclear plants or chemical process plants. (8)
  - (ii) State the necessity of risk benefit analysis. (8)

Or

- (b) Discuss the causes of Bhopal disaster. Explain the responsibility of engineers in the design of product in the design stage itself before the event of an accident. (16)

14. (a) Discuss human rights, professional rights and employee rights in an engineering field. (16)

Or

- (b) (i) What are the main elements of IPR? Give examples of discrimination. (8)  
(ii) Discuss about Collegiality and Loyalty. (8)
15. (a) Discuss the following in detail :  
(i) Business ethics  
(ii) Environmental Ethics  
(iii) Computer Ethics  
(iv) Weapons Development. (4 × 4 = 16)

Or

- (b) Discuss the following in detail :  
(i) Engineers as managers  
(ii) Engineers as advisors  
(iii) Engineers as consultants  
(iv) Moral leadership. (4 × 4 = 16)
-

Reg. No. : 

--	--	--	--	--	--	--	--	--	--	--	--

**Question Paper Code : 71639**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015

Seventh Semester

Electronics and Communication Engineering

GE 2025/GE 606/10177 GE 005/10144 CSE 59 — PROFESSIONAL ETHICS IN  
ENGINEERING / PROFESSIONAL ETHICS AND HUMAN VALUES

(Common to Fifth Semester – Textile Technology / Textile Technology  
(Fashion Technology) and Biotechnology)

(Also common to Sixth Semester – Civil Engineering, Automobile Engineering and  
Electrical and Electronics Engineering)

(Regulation 2008/2010)

(Common to PTGE 2025/10144 CSE 59/10177 GE 005 — Professional Ethics in  
Engineering for B.E. (Part-Time) Fifth Semester – Civil Engineering and  
Electrical and Electronics Engineering, Seventh Semester – CSE/ECE/  
Mechanical – Regulation 2009/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define moral values with suitable examples.
2. Define 'professionalism'.
3. Why engineers are considered as responsible experimenters?
4. List the advantages of industrial standards.
5. Define 'informed consent'.
6. What is the use of risk-analysis?
7. Define 'collegiality'. What are its elements?

8. List the factors that enhance the self confidence in a person.
9. Define the terms 'honesty' and 'moral leadership'.
10. What do you understand by 'business ethics'?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe Kohlberg and Gillegan's theories on Moral autonomy. (10)  
(ii) Write a brief note on the types of inquiries. (6)

Or

- (b) Discuss in detail the uses and limitation of ethical theories.

12. (a) Discuss the ethical issues involved in challenger case study.

Or

- (b) (i) Explain how the codes of ethics guides an engineer in the professional behaviour. (8)  
(ii) Discuss briefly the role of Industrial standards. (8)

13. (a) Describe the concept of  
(i) Risk benefit analysis. (8)  
(ii) Fault tree analysis. (8)

Or

- (b) What are the safety lessons that can be learned from Bhopal disaster? Discuss the role of Governments regulator's in reducing the risk.

14. (a) (i) Discuss the significance of loyalty and collegiality in team work? (8)  
(ii) Distinguish between employee rights and professional rights. (8)

Or

- (b) Write a brief note on :  
(i) Institutional Authority.  
(ii) Discrimination.

15. (a) What is environmental ethics? Explain its significance. Give some of the environmental issues of concern to engineers.

Or

- (b) Discuss the various global issues that have an impact on business.
-