

**AALIM MUHAMMED SALEGH COLLEGE OF ENGINEERING**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**

**GE6075 – PROFESSIONAL ETHICS IN ENGINEERING**

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**PREPARED BY: ER.RUBIN JULIS M Asst.Prof**

AMSCCE - 1101

## UNIT I HUMAN VALUES

Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management

### PART – A

**1. What are the characteristics of values?(NOV/DEC2017)**

Values are bipolar with a positive and a negative pole such as pleasant/painful, easy/difficult, strong/weak, rich/poor, beautiful/ugly, true/false, good, and bad

**2. What are the two important ways of building courage?(NOV/DEC2017)**

The two important ways of building courage are given

below raise your consciousness

move from fear to action even if you expected to fail

**3. Define moral values with suitable examples?(APRIL MAY 2017)**

Moral values are understood to be those that make a person good purely and simply as a person They are not qualities or attributes of the person but outside his or her control

**4. Define the term service learning?(APRIL MAY 2017)**

Service learning is a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience teach civic responsibility and strengthen communities

**5. what are values?(NOV/DEC 2016)**

values are understood to be those that make a person good purely and simply as a person They are not qualities or attributes of the person but outside his or her control

**6. what is meant by self confidence?(NOV/DEC2016)**

Success comes to those who dare and act it seldom comes to the timid said our former pandit Jawaharlal Nehru also we know that faith in oneself is confidence gives rise to strength and courage to the mind

**7. Specify how the Ethics is classified?**

Ethics Classification are done as follows Personal , Corporate , Professional

**8. List some of the Personal Ethics ?**

- Some of the Personal Ethics are Copying of Home works and tests
- Copying of video CD's
- Usage of college papers for personal use
- Software piracy
- Income taxes

**9. Define the term Ethics ?**

Term Ethics obtained from the Greek word ethos, which means study of what is wrong and what is right (or) study of good and bad character.

**10. Define Engineering Ethics ?**

Engineering Ethics is The study of the moral issues and decisions confronting individuals and organizations engaged in engineering and The study of related questions about the moral ideas, character, policies, relationship of people and corporations involved in technological activities.

**11. What are Three Types of Enquiry?(May 2013)**

Three Types of Enquiry are Normative Enquiry, Factual Enquiry, Conceptual Enquiry

**12. Explain the Three Types of Enquiry ?**

Normative Enquiry is the most central, which seek to identify the values that should guide individuals and groups. Conceptual Enquiry are directed towards clarify the meaning of concepts, principles and issues in Engineering

Ethics. Factual Enquiry or Descriptive Enquiry or Explanatory Enquiry, which seek to uncover information bearing upon value issues and identify the key factors that call for specific actions.

### **13. List some of the examples of Normative Enquiry.**

Some of the examples of Normative Enquiry are listed below. How far does the obligation of engineers to protect public safety extend in given situations? When if ever should engineers be expected to blow the whistle on dangerous practices and the judgment for whom the work. Whose values ought to be primary in making judgments about acceptable risks in a design of public transport system, those of management, senior engineers, voters, or a combination of these.

Which particular laws and organizational procedures affecting engineering practice are morally warranted? What moral rights should engineers be recognized as having in order to help them fulfill their professional obligations.

### **14. Define the term Bribe.**

Money or gift given to obtain procure things (that is often dishonest or illegal things). Therefore, the action or decision taken is in favor of the person who had given the bribe.

### **15. List the complexities that are involved in moral situations.(Nov 2012)**

Some of the complexities that are involved in moral situations are

- Vagueness
- Conflicting Reasons
- Problems of Disagreement

### **16. What is Moral Dilemmas?**

Moral Dilemmas are certain kind of situations in which a difficult choice has to be made for the Moral Problems.

### **17. What are the different levels of moral development suggested by Kohlberg?**

- The different levels of moral development suggested by Kohlberg are
- Pre-conventional
- Conventional
- Post-conventional

### **18. Define Micro-Ethics.**

This term stresses more about some typical and everyday problems, which play an important role in the field of engineering and in the profession of an engineer.

### **19. Define Macro-Ethics.**

This term deals with all the social problems which are unknown and suddenly burst out on a regional or national level.

### **20. What are steps used to resolve the Moral Dilemmas?**

There are six steps to resolve the moral dilemmas, they are Identify the problem Identify the potential issues involved Review your organization's code of ethics, policies and local laws Evaluate potential course of action Obtain consultation Determine the best course of action

### **21. What does Moral Autonomy mean?(May 2013)**

Moral Autonomy means the skill and habit of thinking rationally on ethical issues based on moral concern.

### **22. What do you mean by the term Virtues?**

The moral ideals in which a profession is dedicated specify the Virtues. Virtues are the desirable features of character, which related to other individuals, group, or organizations. They have as much to do with motives, attitudes, and emotions as they do with right or wrong conduct.

### **23. List some of the Models of Professional Roles?**

Some of the Models of Professional Roles are Savior, Guardians, Bureaucratic Servant, and Social Servants, Social enabler and catalyst and Game Players.

### **24 Engineers as Bureaucrat – Discuss?**

The role of engineers is to be a servant who receives and translates the directives of management into concrete achievement. The engineer's special skill resides in solving problems within the constraints assigned by the manager.

### **25. Engineers as Saviors – Discuss?**

Some people thought that a philosopher king is required to create a ideal society and other group believed that engineers hold the key in creating a stopian society.

punished. This is the development of children and few adults never cross this stage. (Same as Kohlberg Theory for this level alone)

## **26. Engineers as Guardians – Discuss?**

Engineers know the best direction in which the technology should develop. Accordingly, they give position basis on the experience, so that they can guard the society by doing things that is involved for the best of the society.

## **27. Engineers as Social Servants – Discuss?**

The role of engineers is obedient service to the management but their true master is the society. Society expresses its interest either directly by purchasing products or indirectly through government representation and consumer groups. Engineers in cooperation with the management have the task of receiving society directly and satisfy the society needs.

## **28. Engineers as Social enabler and catalyst – Discuss?**

Engineers are also called as social servant models. Service to the society is not carried out directly; ultimate power and authority lie with management for the engineers. Sometime engineers are needed to help management so that they can understand their own needs to make decisions about technological developments.

## **29 Engineers as Game Players – Discuss?**

Engineers are neither servants nor masters of anyone. Instead they play by the economics game rules that happens to be effective at a given times. Their aim is to play successfully within a organization, enjoying both the pleasures of technological work and the satisfaction of winning ahead in a competitive world.

## **30. What are the uses of Ethical Theories?**

Some of the uses of Ethical Theories are Resolving moral dilemmas Justifying moral obligations Relating moral and professional morality

## **31. Differentiate between Act-Utilitarianism and Rule-Utilitarianism?.**

Utilitarianism will look at each situation to see whether and how far professionals should be allowed to exercise their conscience in pursuing their duties to the public.

## **32 . Define Ethical Pluralism and Ethical Relativism?**

Ethical Pluralism means there are many views of looking at ethical problems and it is difficult to peg down to one solution, which is acceptable to all.

Ethical Relativism is an action that is moral if it is within the framework of law or custom.

## **33. What is the main goal of Engineering Ethics?**

They should have a clear concept on related theories and standards involved To identify and enlist the types of ethical issues that is likely to occur

## **34. What is Consensus and Controversy?**

Moral autonomy is the fascinating concept of engineering ethics for professional engineers. When the ethical values are being implemented in practical terms, some consensus and controversial implications and issues arise. The harmonious interaction between engineers and public individuals is the crucial factor for the manifestation of the consensus and

Controversy

## **35. What is Ethical Accountability? (MAY 2011)**

Accountability is the highest form of responsibility. In this case, engineer is specifically charged with a certain responsibility, he is duty bound to fulfill it all costs and if he fails, he can be questioned and even punished.

## **36 Explain how moral issues are related with (i) Organization (ii) Environment and (iii) Society**

- Organizational Related: Most of the engineers are not self-employed, they are employees of some organization or other. As an employee, an Engineer should utilize his / her skills in the benefit of the organization and should take decisions in the interest of the organization.
- Environment Related: It is very essential to use the resources carefully without depleting them. An engineer should take care of not to spoil the nature resources.
- (iii) Society Related: An engineer is expected to have a certain amount of social responsibility in addition to his core activities. Thus, his motive should not be solely to earn money at the cost of society interest.

## **37. What are the Significances of Engineering Ethics? (May 2011)**

- The rules & standards governing the conduct of engineers in their role as professionals.
- It is a body of philosophy indicating the ways that engineers should conduct themselves in their professional capacity.

## **38. What is meant by Normative Enquiry? (May 2011)**

Normative Enquiry is the most central, which seek to identify the values that should guide individuals and groups

**39. State the various approaches to engineering ethics (Nov 2011)**

Activity and area of inquiry, distinguishing moral from non moral problems, set of beliefs, attitudes and habits and moral problems in engineering.

**40. What are conceptual enquiries? (Nov 2011)**

Conceptual Enquiry are directed towards clarify the meaning of concepts, principles and issues in Engineering Ethics

**41. Distinguish self respect and self esteem? (Nov 2012)**

Self respect is a moral concept whereas Self esteem is a psychological concept. Self respect refers to the virtue of properly valuing oneself whereas self esteem refers to having a positive attitude towards oneself, the attitude may be excessive or unwarranted.

**42. Define ethics and mention some universally accepted ethical standards?(NOV 2013)**

Disciple in dealing with what is Wright or wrong or with moral duty and obligation , The ethical standards are

- justifying professional obligation
- Use full in expressing every day moral experiences
- Justifying professional morality

**43. Define the term Profession ?**

Profession defines as a Declaration of belief in a course for a job.

**44. Discuss the term Professional as Independence ?**

So long as the individual is looked upon as an employee rather than as a free artisan, to that extent there is no professional status.

**45. Discuss the term Professionalism as serving employers?**

It is essential that professional should serve rather than filtering their everyday work through a sieve of ethical sensitivity

**46. Discuss the term Professional an intermediate position ?**

Two general criteria are specified, they are Attaining standards of achievements in education, job performance or creativity in engineering that distinguish from engineering technicians and technologists.

Accepting as part of their professional obligation at least the basic moral responsibilities to the public as well as to their employers, client, colleagues, and subordinates.

**47. Define Work Ethics[APR 2019]**

**Work ethic** is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue or value to strengthen character and individual abilities. It is a set of values centered on importance of work and manifested by determination or desire to work hard.

**48. Brief on Spirituality[APR 2019]**

Spirituality has begun to hold an increasing place in organizational studies. The term spirituality was first generally examined with a view to “the self” and then with its effects in the workplace within the studies of “workplace spirituality”.

**PART – B  
Questions**

**Q.No**

- 1 What is service learning? why service learning is important ?explain characteristics of service Learning ?(NOV /DEC 2017)  
Refer Notes(Pg 7)**
- 2 Define Empathy State and explain the elements benefits of Empathy and compare Empathy with Sympathy ?(NOV /DEC 2017)  
Refer Notes(Pg 14-15)**
- 3 Explain the scope and importance of professional ethics in engineering ?(APRIL MAY 2017)**

#### **4 Discuss the role of yoga for professional excellence and stress management ?(APRIL MAY 2017,2019)**

Medical research for decades that yoga and meditation, two practices related to mindfulness, are considered a means of activating the body's natural mechanisms for managing stress. Researchers at Johns Hopkins University surveyed over 19,000 studies on meditation and used stringent criteria to identify 47 of the most rigorously controlled studies on which to perform a meta-analysis of the clinical benefits of meditation. The analysis revealed that these programs lowered stress, anxiety, and depression and that "clinicians should be prepared to talk with their patients about the role that a meditation program could have in addressing psychological stress"

##### **Role of meditation in managing stress**

The effectiveness of mindfulness programs that use meditation in managing stress can be explained by physiological changes that take place in both the brain and the body. In a recent TED Talk, Harvard-based neuroscientist Dr. Sara Lazar explains that "meditation can literally change your brain" by increasing the size of the hippocampus, which is associated with learning and memory, and the temporal-parietal junction, which is associated with empathy and compassion. Dr. Kelly Brogan, holistic women's health physician, describes those changes as decreased heart rate, blood pressure, rate of breathing, and muscle tension, and she adds that this "relaxation response" can combat stress, a part of "what is actually driving chronic diseases such as auto-immune, cardiovascular, and psychiatric pathology"

##### **Role of yoga in managing stress**

Yoga, another practice in mindfulness, is also supported by medical research as a means of helping sufferers manage their stress. Yoga has been shown to have a regulatory effect on two key neurobiological systems: the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS). With repeated exposure to stressors over time, these systems are bombarded by catecholamines like epinephrine and norepinephrine (stress hormones), which can result in their becoming "hyper vigilant" and "dysregulated." The dysfunction of these systems is thought to dispose one to diseases such as "obesity, diabetes, autoimmune disorders, depression, substance abuse, and cardiovascular disease" (Ross & Thomas, 2010). Dr. Bessel Van der Kolk, professor of psychiatry at Boston Medical School and one of the world's leading authorities on post-traumatic stress disorder(PTSD), has recognized this "down-regulation" benefit of yoga and applied it to his practice with PTSD patients. Van der

Kolk eloquently describes the physiological basis of stress and how yoga practice can help alleviate that stress: “Traumatized people often are terrified of the sensations in their own bodies which makes it hard to take pleasure in the present because the body keeps replaying the past.[Yoga] is a way for people to regulate the core arousal system in the brain and feel safe inside their bodies”

In addition to promoting health and managing stress, research has demonstrated that mindfulness activities can also improve attention and cognition. Dr. Judson Brewer at the Yale School of Medicine, for example, explains that experienced meditators show deactivation of the default mode network (DMN), a region involved in “daydreaming and mind-wandering.” His research also shows that meditators show functional changes in different areas of the cingulate and prefrontal cortices, both of which are crucial regions for cognitive control. According to Brewer, “meditation may transform the normal, resting function of the brain into one that more closely resembles a meditative state from that of mind-wandering to one of being centered in the present.” Brewer even goes on to weigh in on the clinical significance of these findings vis-à-vis improved stress management: “[Meditation] could certainly be used to help people work through frustration and anxiety so that they don’t move into a clinical depression or clinical anxiety disorder, or start using drugs. But at the same time, it can be used when people already have these disorders.”

- 5 **Explain character and spirituality and their importance in ethics ?(NOV/DEC 2016,APR/MAY 2018)**  
Refer Notes(Pg 32-37)
- 6 **Explain the important of self confidence in ethics ?(NOV/DEC 2016)**  
Refer Notes(Pg 31-32)
- 7 **Explain in detail about engineering ethics and its philosophy ?**  
Refer Notes(Pg 5-7)
- 8 **Where and how do moral problems arise in engineering? What is professional responsibility? Discuss theories about virtues.**
- 9 **Discuss the scope and aims of Engineering ethics.scope and aim of engineering ethics Professions and professionalism**
- 10 **Discuss the theories pertaining to Moral Autonomy with specific reference to consensus and controversy.**  
Refer Notes Pg(26-29)
- 11.**Write a short notes on Honesty and Integrity[APR 2019]**  
Refer Notes Pg(5,11-12)

## UNIT II ENGINEERING ETHICS

Senses of „Engineering Ethics“ – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg’s theory – Gilligan’s theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories

### PART – A

#### 1. State the three types of Inquiry?(NOV/DEC2017)

- Normal inquiries
- Conceptual inquires
- Factual inquires

#### 2. What are the two important versions of utilitarianism?(NOV/DEC2017)

- Act utilitarianism
- Rule utilitarianism

#### 3.what is meant by engineering as experimentation ?(APRIL MAY 2017 )

During the course of an engineer’s career he is frequently involved in research experimentation or the testing of new products especially during the design phase one needs to apply various experimental procedures which is called experimentation

#### 4.state the important of ethical theories ?(APRIL MAY 2017)

Ethical theories are helpful in understanding and resolving moral dilemmas

- Ethical theories are useful in justifying professional obligations and ideals

#### 5.State Gilligan’s theory ?(NOV/DEC 2016)

Gilligan refers her context oriented emphasis on maintaining personal relationship as the ethics of care and contrasts it with Kohlberg’s ethics of rules and rights .

#### 6.what is meant by consensus ?(NOV/DEC2016)

Consensus means agreement when an individual exercise moral autonomy he may not be able to attain same results as other people obtain in practicing their moral autonomy

#### 7. What does Moral Autonomy mean? (MAY 2013)

Moral Autonomy means the skill and habit of thinking rationally on ethical issues based on moral concern.

#### 8. List the complexities that are involved in moral situations. (NOV 2012)

- Some of the complexities that are involved in moral situations are
- Vagueness
- Conflicting Reasons
- Problems of Disagreement

#### 9. Define professionalism. (APR/MAY 2015)

Professionalism is often defined as the strict adherence to courtesy, honesty and responsibility when dealing with individuals or other companies in the business environment. This trait often includes a high level of excellence going above and beyond basic requirements. Work ethic is usually concerned with the personal values demonstrated by business owners or entrepreneurs and instilled in the company’s employees. The good work ethic may include completing tasks in a timely manner with the highest quality possible and taking pride in completed tasks.

#### 10. State the use of ethical theories. (MAY/JUNE 2014)

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

#### 11. What are the modes of professional roles? (NOV/DEC 14)

Some of the Models of Professional Roles are Savior, Guardians, Bureaucratic Servant, and Social Servants, Social enabler and catalyst and Game Players.

#### 12. What do you mean by „Profession“?( MAY/JUN 12)

Profession defines as a Declaration of belief in a course for a job.

#### 13. Define the term Empathy. (MAY/JUN 12)

The term “empathy” is used to describe a wide range of experiences. Emotion researchers generally define empathy as the ability to sense other people’s emotions, coupled with the ability to imagine what someone else might be thinking or feeling

**14. Define Ethics?(NOV/DEC 13)**

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

**15. Define Engineering Ethics?(MAY/JUNE 2014,APR/MAY 11)**

- \* 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.

**16. What is the need to study Ethics?**

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

**17. What are the different levels of moral development suggested by Kohlberg?**

- The different levels of moral development suggested by Kohlberg are
- Pre-conventional
- Conventional
- Post-conventional

**18. Differentiate Moral and**

**Ethics? 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.

**19. What is the method used to solve an Ethical problem?**

- 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.

**20. Differentiate Micro-ethics and Macro-ethics?**

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.

**21. What are the three types of Inquiry? (MAY 2013)**

- Normative Inquiry – Based on values.
- Conceptual Inquiry – Based on meaning.
- Factual Inquiry – Based in facts.

**22. What are the sorts of complexity and murkiness that may be involved in moralsituations?**

- Vagueness
- Conflicting reasons
- Disagreement

**23. What are the steps in confronting Moral Dilemmas?(NOV/DEC 12,APR 2019)**

- 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.

**24. Define Moral Autonomy? (NOV/DEC 14,MAY/JUN 12)**

- Self-determining
- Independent
- Personal Involvement
- Exercised based on the moral concern for other people and recognition of good moral reasons

**25. State Rawl's principles?(APR/MAY 11)**

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

**26. Give the various tests required to evaluate the Ethical Theories?**

- Theory must be clear, and formulated with concepts that are coherent and applicable.
- It must be internally consistent in that none of its tenets contradicts any other.
- Neither the theory nor its defense can rely upon false information.
- It must be sufficiently comprehensive to provide guidance in specific situations of interests to us.
- It must be compatible with our most carefully considered moral convictions about concrete situations.

**27. What are the criteria required for a Profession?**

- Knowledge
- Organization
- Public Good

**28. Give the general criteria to become a Professional engineer?**

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.

**29. Define Integrity & Compromise?**

- Integrity is the bridge between responsibility in private and professional life.
- In a negative sense it means to undermined 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.

**30. Give the two aspects of Honesty & two forms of Self-respect? [APR 2019]**

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

**two forms of Self-respect**

- Recognition self-respect
- Appraisal self-respect

**31. Explain Post-Conventional Level of Kohlberg Theory.**

In the third level, the individuals are guided by strong principles and convictions but not by selfish needs or pressures from the society. Kohlberg calls the person in this level as Autonomous.

**32. What are the types of Theories about Morality?**

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

### **33. Explain Pre-Conventional Level of Kohlberg Theory.**

It is the first level, which is based upon desire to derive benefits for one. The strong driving force at this stage is the desire to avoid punishment. People at this level try to act ethically only for self benefit and to avoid caught and punished. This is the development of children and few adults never cross this stage.

### **34. Explain Conventional Level of Kohlberg Theory.**

In this level, the moral behavior of the individual is determined by the standards of the family, community, and society. Individuals at this level are motivated by the desire to be approved by others and to meet the expectations of the social unit. Kohlberg says that many individuals do not cross this level

### **35. Explain Post-Conventional Level of Kohlberg Theory.**

In the third level, the individuals are guided by strong principles and convictions but not by selfish needs or pressures from the society. Kohlberg calls the person in this level as Autonomous.

### **36. What are the limitations or difficulties of Kohlberg Theory?**

Theoretically, the classification was clear but when it is practically applied, it has some drawbacks namely, How to judge the individual belongs to the first, second or the third level. What are the criteria to judge and measure the individual for each level? The theory implies that the individual moral level is pre-programmed and inborn. If at all, any level can be changed it is not clear what the factors are.

### **37. Explain Pre-Conventional Level of Gilligan Theory.**

It is the first level, which is based upon desire to derive benefits for one. The strong driving force at this stage is the desire to avoid punishment. People at this level try to act ethically only for self benefit and to avoid caught and punished. This is the development of children and few adults never cross this stage. (Same as Kohlberg Theory for this level alone)

### **38. Explain Conventional Level of Gilligan Theory.**

Here the basic motive is willingness to sacrifice one's own interests and a strong desire not to hurt others interests. Mostly women come in this category.

### **39. Explain Post-Conventional Level of Gilligan Theory.**

Here the individual strikes a mature balance between the two extremes – self interest on the one hand and sacrifice on the other hand. Here they apply context oriented reasoning like examining all facts, people and circumstances involved, rather than by applying general rules.

<b>Q.No</b>	<b>PART – B Questions</b>
<b>1</b>	<b>What is meant by Moral Autonomy ?Discuss the factors influencing person concern and the skills required to improve more Autonomy ?(NOV /DEC 2017)</b> Refer Notes Pg(24-27)
<b>2</b>	<b>Describe the professional roles played by an engineer? (NOV/DEC 2017)</b> Refer Notes Pg(31-32)
<b>3</b>	<b>Describe Kohlberg and Gilligan's theories on moral autonomy ?(APRIL MAY 2017,2018,2019)</b> Refer Notes Pg(27-31)
<b>4</b>	<b>Name and describe the theories of right action ?(APRIL MAY 2017)</b> Refer Notes Pg(36-41)
<b>5</b>	<b>Explain the details about the senses of engineering Ethics ?(NOV/DEC 2016)</b> The word ethics has different meanings but they are correspondingly related to each other. In connection with that, Engineering ethics has also various senses which are related to one another.

Ethics	Engineering Ethics
<p>Ethics is an activity which concerns with making investigations and knowing about moral values, finding solutions to moral issues and justifying moral issues and justifying moral judgments.</p> <p>Ethics is a means of contrasting moral questions from non-moral problems.</p>	<p>Like the ethics, engineering ethics also aims at knowing moral values related to engineering, finding accurate solutions to the moral problems in engineering and justifying moral judgments of engineering.</p> <p>Engineering Ethics gives a total view of the moral problems and how to solve these issues specifically related to engineering field.</p>
<p>Ethics is also used as a means of describing the beliefs, attitudes and habits related to an individual's or group's morality. Eg. : Ethics given in the Bhagavat Gita or the Bible or the Quran.</p>	<p>Engineering ethics is also using some currently accepted codes and standards which are to be followed by group of engineers and engineering societies.</p>
<p>As per the definition of dictionaries 'moral principles' is about the actions and principles of conduct of the people. i.e. ethical or unethical.</p>	<p>Engineering ethics also concerns with discovering moral principles such as obligation, rights and ideals in engineering and by applying them to take a correct decision.</p>

From these senses of Engineering ethics, one can realize that it is the study of morality

### **What is morality?**

The term 'morality' concerns with (a) what ought or ought not to be done in a given situation, (b) what is right or wrong in handling it, (c) what is good or bad about the persons, policies and principles involved in it.

If an action is said to be morally right or a principle is said to be morally good, then they are said to be had some moral reasons in supporting it.

Moral reasons include respecting others and ourselves, respecting the

rights of others, keeping promises, avoiding unnecessary problems to others and avoiding cheating and dishonesty, showing gratitude to others and encourage them to work.

So, if an engineering decision is said to be a good one, it has to meet out all the specifications. These specifications must be covered both the technical and the moral specifications such as safety of the product, reliability, easy maintenance and the product should be user-friendly with environment.

#### VARIETY OF MORAL ISSUES

There are so many engineering disasters which are greater / heavier than the level of acceptable or tolerable risk. Therefore, for finding and avoiding such cases such as nuclear plant accident at Chernobyl (Russia), Chemical plant at Bhopal (India) where a big disaster of gas leakage, occurred in 1980, which caused many fatal accidents. In the same way, oil spills from some oil extraction plants (the Exxon Valdez plant), hazardous waste, pollution and other related services, natural disasters like floods, earth quake and danger from using asbestos and plastics are some more cases for engineering disasters. These fields should be given awareness of engineering ethics. Hence, it is essential for engineers to get awareness on the above said disasters. They should also know the importance of the system of engineering.

When malfunction of the system is a rapid one, the disaster will be in greater extent and can be noticed immediately. When they are slow and unobserved, the impact is delayed. So, the engineers should not ignore about the functions of these systems.

These cases also explain and make the engineers to be familiar with the outline of the case in future and also about their related ethical issues.

#### **Approaches to Engineering Ethics:**

- i** *Micro-Ethics:* This approach stresses more about some typical and everyday problems which play an important role in the field of engineering and in the profession of an engineer.
- ii** *Macro-Ethics:* This approach deals with all the social problems which are unknown and suddenly burst out on a regional or national level.

So, it is necessary for an engineer to pay attention on both the approaches by having a careful study of how they affect them professionally and personally. The engineers have to tolerate themselves with the everyday problems both from personal and

societal point of view.

- 6 **Discuss in detail the various ethical theories and their uses ?(NOV/DEC2016,APR/MAY 2019)**  
Refer Notes Pg(36-41)
- 7 **Explain the levels of moral development proposed by Kohlberg and Gilligan. Also bring out the drawbacks of Kohlberg theory. ( APR( 13/14/15), NOV(13/14) )**  
Refer Notes Pg(27-31)
- 8 **Discuss the theories pertaining to moral autonomy with specific reference to consensus and controversy. (NOV 13, APR 11)**  
Refer Notes Pg(26-29)
- 9 **Explain the types of inquiries in engineering.(APR 15, MAY 14, NOV 13,APR 2019)**  
Refer Notes Pg(24-25)

### UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION

Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law.

#### PART – A

**1. What is meant by conscientiousness?(NOV/DEC2017)**

Conscientiousness means commitment to live according to certain values it implies consciousness Engineers have to be sensitive to range of moral values and responsibilities, which are relevant in a given situation.

**.2. What are codes of Ethics referred to?(NOV/DEC2017/APR 2019)**

The primary aspect of codes of ethics is to provide the basic framework for ethics judgment for a professional

The code of ethics are referred as code of conduct express the commitment to ethical conduct shared by members of profession. In other words these code furnish common agreed upon standards for professional conduct

**3.what are the uncertainties occur in model design ?(APRIL MAY 2017)**

While designing a product the designer engineer must deal with many uncertainties many of the risks can be expressed as probabilities and as educated guesses

The uncertainties are in the form of application of the product materials used for producing the product changing economic conditions unfavorable environment conditions ,temperature etc

**4.how does the law facilitate ethics in engineering ?APRIL MAY 2017)**

Engineers are expected to play a vital role in framing implementation and propagating the rules of engineering also they have to strictly adhere to those rules

**5.Differentiate scientific experiments and engineering projects ?(NOV/DEC 2016)**

The engineering experiments involve human beings as experimental subjects in fact clients and customers have more control as they own the authority of that project.

**6. Give the limitations of codes ?(NOV/DEC2016)**

The four limitations of codes of ethics are as follows :

The codes of ethics are broad guidelines restricted to general and vague wordings/phrases. Engineering codes often have internal conflicts which may result in moral dilemmas

**7.Define Engineering Ethics (MAY 2013)(NOV 2013)**

Engineering ethics is the study of moral issues and decisions confronting individuals and organizations involved

in engineering and the study of related questions about moral conduct, character, ideals and relationships of peoples and organizations involved in technological development

**8. What do you understand by “a balanced outlook on law”? (MAY 2013)**

In order to live, work, and play together in harmony as a society, we need to carefully balance individual needs and desires against collective needs and desires. This is done to obtain ethical conduct. Ethical conduct defines a strong element of altruism, provides such a balance

**9 . What is meant by valid consent? (NOV 2011)**

A consent, which has been given voluntarily, is known as valid consent. Valid consent is also defined as consent

based on the information a rational person would want together with any other requested information to make a rational decision.

**10. What are the Senses of Engineering Ethics?(NOV/DEC 14)**

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

**11. What are the features of Engineering experimentation. (NOV/DEC 14) (MAY/JUN 12)**

- Partial ignorance
- Final outcome of projects
- Knowledge about product

**12. what are the salient features of informed consent in engineering experimentation?(APR/MAY 11)**

Informed Consent is understood as including two main elements:

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

**13. Give ant two examples in field of engineering for learning from the past.(NOV/DEC12)**

- 1.Titanic disaster
- 2. Nuclear reactor accident at Three Mile Island

**14.What are the uncertainties occur in the model designs?[APR 2019]**

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

**15. Define Engineering Ethics?(MAY/JUNE 2014,APR/MAY 11)**

\* 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.

**16. List the reason behind viewing engineering projects as experiments.(MAY/JUN 12)**

- Any project is carried out in partial ignorance.
- The final outcomes of engineering projects, like those of experiments, are generally uncertain.
- Effective engineering relies upon knowledge gained about products before and after they leave the factory – knowledge needed for improving current products and creating better ones.

**17. What reasons lead to many repetitions of past mistakes?(MAY/JUN 12)**

This might be expected that engineers would learn not only from their own earlier design and operating results, but also from those of other engineers. Unfortunately, that is frequently not the case. Lack of established channels of communication, misplaced pride is not asking for information, embracement at failure or fear of litigation and plain neglect often impede flow of such information and lead to many repetitions of past mistakes.

**18. What is the method used to solve an Ethical problem?**

- 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.

**19. What are the general features of morally responsible engineers?**

- Conscientiousness.
- Comprehensive perspective.
- Autonomy.
- Accountability.

**20. What is the purpose of various types of standards?**

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

**21. Define Code?**

Code is a set of standards and laws.

**22. What are the roles of codes of ethics?(MAY/JUN 12/NOV /DEC2017)**

- Inspiration and Guidance
- Support
- Deterrence and Discipline
- Education and Mutual Understanding
- Contributing to the Profession's Public Image
- Protecting the Status Quo
- Promoting Business Interests

**23. What are the problems with the law in engineering?**

- Minimal compliance
- Many laws are without enforceable sanctions

**24. Differentiate scientific experiments and engineering projects?**

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

**25. What are the uncertainties occur in the model designs?**

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

**26. What are the types of Theories about Morality?**

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

**27. Differentiate Weak Preferential Treatment and Strong Preferential Treatment?**

- Weak preferential treatment involves giving an advantage to members of traditionally discriminated-against groups over equally qualified applicants who are members of other groups.
- Strong preferential treatment involves giving preference to minority applicants or women over better qualified applicants from other groups

**28. What are the types of Theories about Morality?**

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

**29. What are the problems with the law in engineering?**

- Minimal compliance
- Many laws are without enforceable sanctions.

**30. What are the two general ways to apply ethical theories to justify the basic right of professional conscience?**

• Proceed piecemeal by reiterating the justifications given for the specific professional duties. Justify the right of professional conscience, which involves grounding it more directly in the ethical theories

**31. Define ethical accountability. (APR/MAY 2011)**

The people those who feel their responsibility always accepts the entire blame for their actions. In short, it is known as accountability, which means being culpable (guilty) and hold responsible for faults and respond to the assessment of others. Accountable persons will conduct themselves based on the specific circumstances.

**32. List the limitations of ethical codes. (APR/MAY 2011, NOV/DEC 14, MAY/JUN 09)**

- Codes are restricted to general and vague wording.
- Codes can't give a solution or method for solving the internal conflicts.
- Codes cannot serve as the final moral authority for professional conduct.
- Codes can be reproduced in a very rapid manner.

**PART – B  
Questions**

**Q.No**

- 1 What are codes of Ethics ? State and explain the function of codes of ethics and the objective to codes ? (NOV /DEC 2017,2019)**  
Refer Notes Pg(49-50)
- 2 Discuss the problems associated with laws in engineering and Enumerate the proper role of law engineering ? (NOV /DEC2017)**  
Refer Notes Pg(51-52)
- 3 what is the importance of codes of ethics ? explain in detail ? (APRIL MAY 2017,2019)**  
Refer Notes Pg(49-50)
- 4 How can an engineer become a responsible experimenter ? Explain in detail ? (APRIL MAY 2017,2019)**  
Refer Notes Pg(48-49)
- 5 How can engineer become a responsible experimenter ? highlight the code of ethics for engineers ? (NOV/DEC2016,2019)**  
Refer Notes Pg(48-50)
- 6 Discuss on the roles played by the codes of ethics set by professional societies? (NOV/DEC2016,2019)**  
Refer Notes Pg(48-50)
- 7 Explain “ Engineers as Responsible Experimenters”. (MAY 12)**  
Refer Notes Pg(48-49)
- 8 what are the moral and ethical lessons we can be learned from space shuttle challenger tragedy and how the principal actors behave as responsible experiments. ( APR 15, MAY 14/13,2018)**  
Refer Notes Pg(52-55)
- 9 What are the similarities between engineering experiments and standard experiments? ( APRIL/MAY 13,2018)**  
Refer Notes Pg( 46-48)
- 10 What are the aspects of engineering that make it appropriate to view engineering projects as experiments.**  
Refer Notes Pg( 46-48)

## UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk -  
Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest –  
Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR)  
– Discrimination

### PART – A

#### 1. What are codes of Ethics referred to?(NOV/DEC2017)

The primary aspect of codes of ethics is to provide the basic framework for ethics judgment for a professional

the code of ethics are referred as code of conduct express the commitment to ethical conduct shared by members of profession. In other words these code furnish common agreed upon standards for professional conduct

#### 2 Define Safety?(NOV/DEC2017)

Safety means the state of being safe means protected from danger and harm

The is always difficult to describe completely what may be safe for one person may not be safe for another person \

#### 3. What is the use of risk analysis?(APRIL MAY 2017)

In practice all the dangerous sports such as motorcycle racing skilling hang gliding bungee jumping horseback riding boxing etc are carried out under the assumed control of the participants these are use of risk analysis

#### 4. Define the term collective bargaining? APRIL MAY 2017)

- International labor organization (ILO) has defined collective bargaining as negotiation about working conditions and terms of employment between an employer and one or more representative with a view to reaching agreement

#### 5. Differentiate between Risk analysis and Risk benefit analysis?(NOV/DEC2016)

Risk analysis is the process that allows management to demonstrate that it has met its obligation of due diligence when making a decision about forward with a new project

Risk benefit analysis is a technique similar to cost benefit analysis used to analyze risk in the project

#### 6. what is intellectual property right?(NOV/DEC2016/APR 2019)

Intellectual property (IP) is a property that results from mental labor

The intellectual property is originating mainly from the activities of the human intellect

#### 7. Define Engineering Ethics (MAY 2013)(NOV 2013)

Engineering ethics is the study of moral issues and decisions confronting individuals and organizations involved in engineering and the study of related questions about moral conduct, character, ideals and relationships of peoples and organizations involved in technological development

#### 8. What shall be the approach of government Regulator towards risk mitigation? (MAY 2013)

- A number of techniques are available for reducing risk. Some of them are Application of inherent safety concepts in design. For example in the case of liquefied gas, storage system the present trend is to replace pressurized storages with cryogenic storage at atmospheric pressure. Use of diversity and redundancy principles in instrumented protection schemes. Regular inspection and testing of safety systems to ensure reliability. Training of operating personal and regular audits to ensure workability of the systems and procedures.

#### 9. What is meant by risk? State the causes of risks (NOV 2011)

A risk is the potential that something unwanted and harmful may occur. These days the new risks are the less obvious effects of technology are now making way to public consciousness.

The mathematical form is  $R = P * C$  Causes of risks are job overconfidence, technological complacency, lack of safe exists

#### 10. What is safety? What does relative safety express? (NOV 2011)

A thing is safe if its risks are justified to be acceptable. Thus, a thing is safe if the perceived risk of the person, who judges is less and it is unsafe if the perceived risk are high. Relative safety indicates the safety the product with respect to similar things.

**11. Give the criteria which helps to ensure a safety design?**

The minimum requirement is that a design must comply with the applicable laws. An acceptable design must meet the standard of “accepted engineering practice.”

**12. 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.

**13. What are the factors for safety and risk?**

- Voluntary and Involuntary risk
- Short-term and Long-term risk
- Expected probability
- Reversible effects
- Threshold levels to risk

**14. What are the drawbacks in the definition of Lawrence?**

- Underestimation of risks
- Overestimation of risks
- No estimation of risks

**15. Give the categories of Risk?**

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

**16. What are the factors that affect Risk Acceptability?**

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

**17. What is the knowledge required to assess the risk?**

- Data in design
- Uncertainties in design
- Testing for safety
- Analytical testing
- Risk-benefit analysis

**18. What are the analytical methods?**

- Scenario analysis
- Failure modes & effect analysis
- Fault tree analysis
- Event tree analysis etc

**19. What are the three conditions referred as safe exit?**

- 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.

**20. How will an engineer assess the safety?**

- 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.

**20. What is the purpose of various types of standards?**

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

## 21. What are the reasons for Risk-Benefit Analysis?

Risk-benefit analysis is concerned with the advisability of undertaking a project. It helps in deciding which design has greater advantages.

It assists the engineers to identify a particular design scores higher with that of the another one.

## 22. Are the engineers responsible to educate the public for safe operation of the equipment? How?

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.

## 23. Define Safety?

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.

## 24. What is the definition of risks? ( NOV/DEC 13)

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) (i.e)

$$R = P * C$$

## 25. Define Acceptability of risks? ( NOV/DE 14)

A risk is acceptable when those affected are generally no longer apprehensive about it. Doubtfulness depends mainly on how the people take the risk or how people perceive it.

## 26. What are the safety measures an engineer must know before assessing a risk of any product?

The factors are:

- Does the engineer have the right data?
- Is he satisfied with the present design?
- How does he test the safety of a product?
- How does he measure and weigh the risks with benefits for a product

## 27. What is the use of knowledge of risk acceptance to engineers?

Though past experience and historical data give better information about safety of products designing there are still inadequate. The reasons are

- The information is not freely shared among industries
- There also new applications of old technologies that provides available data, which are less useful.
- So, in order to access the risk of a product, the engineers must share their knowledge and information with others in a free manner

## 28 What is meant by Disaster? Give an example.

A disaster does not take place until a seriously disruptive event coincides with a state of insufficient preparation. Example: The Titanic collision with an iceberg constituted an emergency, which turned into a disaster because there were too few lifeboats

## 29. What are the positive uncertainties in determining risks?

- There are three positive uncertainties. They are:
- Purpose of designing
- Application of the product
- Materials and the skill used for producing the product.

## 30 What is the use of Risk-Analysis? What are the three factors involved here?

Risk Analysis is used for the assessment of the hazardous associated with an industrial or commercial activity. It involves identifying the causes of unwanted hazardous events and estimating the consequences and likelihood of these events. Three factors involved in this are:

- Hazard Identification
- Consequences analysis
- Probability estimation.

**31. Explain the two types of Risk?**

- Personal Risk:
  - An individual, who is given sufficient information, will be in a position to decide whether to take part in a risky activity or not. They are more ready to take on voluntary risks than involuntary risks.
- Public Risks:
  - Risks and benefits to the public are more easily determined than to individuals, as larger number of people is taken into account. Involuntary risks are found here.

**32. What does Strict Liability mean?**

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.

**33. What is the main barrier to educational attempts?**

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

**34. What happens to the products that are not safe?**

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.

**35. What does Open-mindedness refer to?**

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.

**36. What was the problem in the Chernobyl reactor?**

- The problem was that,
- The output was maintained to satisfy an unexpected demand.
- The control device was not properly reprogrammed to maintain power at the required level.
- Instead of leaving fifteen control rods as required, the operators raised almost all control rods because at the low power level, the fuel had become poisoned.

**37.. What is the need for Protection to IPR? (APR/MAY 11)**

- Prevent plagiarism.
- Prevent others using it.
- Prevent using it for financial gain.
- Fulfill as an obligation to funding agency.

**38. List the problems related to price fixing?(APR/MAY 11)**

The person who were participated in the price fixing game were highly reputed officials of their companies and in their communities. one of the persons was the president of the local chamber of commerce. they did not consider their activities as crime or harmful. Many of them argued that their conduct was beneficial. They also argued that fixation of price was benefit to the public by stabilizing the prices. This crime of price fixing had been spread over the industries for a long period of time.

**39. What are the main features of Whistle Blowing? (NOV/DEC 13,(APR/MAY 15)**

- Act of disclosure
- Topic
- Agent
- Recipient

**40. What does the term collective bargaining refer to?(APR/MAY 15,MAY/NOV/DEC2017)**

Collective bargaining is the negotiation process that takes place between an employer and a group of employees when certain issues arise. The employees rely on a union member to represent them during the bargaining process, and the negotiations often relate to regulating such issues as working conditions, employee safety, training, wages, and layoffs.

When an agreement is reached, the resulting “collective bargaining agreement,” or “CBA,” becomes the contract governing employment issues.

**41 What is meant by occupational crime(MAY/JUN 14)**

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“

**42. What is the difference between bribe and gift.(NOV/DEC 14)**

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

**43. What does whistle blowing mean?(NOV/DEC 14)**

Whistle-blowing is alerting relevant persons to some moral or legal corruption, where “relevant persons” are those in a position to act in response, if only by registering protest. i.e. the employee disclosure of an employer’s illegal or illegitimate practices to persons or organizations that may be able to take corrective actions. The conditions to be met for whistle-blowing are

- Need
- Proximity
- Capability
- Last resort

**44. Distinguish „ Institutional authority" and „Expert authority". (NOV/DEC 12)**

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.

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

**45. What do you understand by the term „Kick backs"? (NOV/DEC 12)**

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

**46. Differentiate Human Rights and Professional Rights? (MAY/JUN 12/APR 2019)**

Human Rights – Possessed by virtue of being people or moral agents.

Professional Rights – Possessed by virtue of being professional having special moral responsibilities.

**47. Define Discrimination? (MAY/JUN 12)**

Discrimination means morally unjustified treatment of people on arbitrary or irrelevant grounds.

**48. Define Collegiality?(NOV/DEC 13)**

Collegiality is a kind of connectedness grounded in respect for professional expertise 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.

**49. What are the central elements of collegiality? (NOV/DEC 13)**

- Respect
- Commitment
- Connectedness
- Cooperation

**50. What are the two senses of Loyalty?**

Agency Loyalty – Acting to fulfill one’s contractual duties to an employer. It’s a matter of actions, whatever its

motives.

Identification Loyalty – Has as much as to do with attitudes, emotions, and a sense of personal identity as it does with actions.

**51. When may an Identification Loyalty be said as obligatory?**

Employees must see some of their own important goals as met by and through a group in which they participate.

Employees must be treated fairly, each receiving his or her share of benefits and burdens

**52. What is the relationship between the Loyalty to the company and Professional responsibility to the public?**

- 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.
- Loyalty to companies or their current owners should not be equated with merely obeying one’s immediate supervisor. An engineer might have professional obligations to both an employer and to the public that reinforce rather than contradict each other

**53. What is the basic moral task of salaried engineers?**

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.

**54. What are the guidelines to reach an agreement?**

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

**55. Define confidential information?**

Confidential information is information deemed desirable to keep secret.

**56. What are the criteria for identifying that information is “labeled” confidential at the workplace?**

- 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

**59. Define Conflicts of Interest?(MAY/JUN 12)**

Conflict of interests is a situation in which two or more interests are not simultaneously realizable. It is the disagreement between public obligation and self-interest of an official

**60. Why does a conflict of interests arise?**

- Financial Investments
- Insider Trading
- Bribe
- Gifts
- Kickbacks

**61. What are the types of Conflicts of interest?**

- Actual conflict of interest
- Potential conflict of interest
- Apparent conflict of interest

**62. What are the forms of Conflicts of interest?**

- Interest in other companies
- Moonlighting
- Insider information

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

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

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

- Patents
- Copyrights
- Trademarks

**65. What are the requirements of Patents?**

- Problem of invention
- Current report of the problems to address
- Solution or procedure to the problem
- Extent of novelty or inventive
- Application or uses
- Details of the inventor

**66. What are the types of Patents?**

- Utility patents
- Design patents

**PART-B  
Questions**

Q.N  
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**What is meant by conflict of interest ?Distinguish between general and professional conflicts of interest and discuss the various types of conflicts of interest ?(NOV /DEC 2017)**

Refer Notes Pg(77-78)

- 2 **What are intellectual property rights ?Explain the elements of intellectual property rights in details and benefits of IPRS ?(NOV /DEC2017)**  
Refer Notes Pg(85-89)
- 3 **Discuss in detail about the employee Rights and its role in the organizations ? (APRIL /MAY 2017,2019)**  
Refer Notes Pg(81-83)
- 4 **Discuss in detail about the moral and ethical issues involved in use of computers ?) (APRIL /MAY 2017,2019)**
- 5 **What are the factors that affect risk acceptability ?what is the use of knowledge of risk acceptance to engineer ?(NOV/DEC2016)**  
Refer Notes Pg(57-65)
- 6 **Discuss The significance of intellectual property rights also explain the legislation covering IPR india (NOV/DEC 2016)**  
Refer Notes Pg(85-89)
- 7 **Discuss the causes of Bhopal disasters. Explain the responsibility of engineers in the design of product in the design stage itself before the event of an accident.( APR 14,APR 2018)Refer Notes Pg(92-94)**
- 8 **Explain how the risks are reduced & explain the concept of „ Risk-Benefit Analysis“ ( MAY 12, MAY 13, APR 15, NOV 13,MAY 18)**  
Refer Notes Pg(67-68)
9. **Discuss the importance on collective bargaining[APR 2019]**  
Refer Notes Pg(72-74)

## UNIT V GLOBAL ISSUES

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers– Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership –Code of Conduct – Corporate Social Responsibility

### PART – A

#### 1 . **What is meant by technology transfer?(NOV /DEC2017)?**

Technology transfer is the process of moving technology to a quite new set of conditions and implementing it thereThe transfer of technology may be conducted by a variety of agents such as governments, volunteer service organizations consulting companies and MNC

#### 2. **Point out the responsibilities of consulting engineers?(NOV.DEC2017)**

Consulting engineers generally exercise their consulting activates as independent they are paid for their services by fees not by salaries

#### 3.**what do you mean by IPR ?(APRIL MAY 2017)**

Intellectual property (IP) is a property that results from mental labor

The intellectual property is originating mainly from the activities of the human intellect

#### **4. How is corporate social responsibilities practiced ? (APRIL MAY 2017)**

The MNC's and their employers have to obey the above human rights while exercise their business without fail

#### **5.what is moral leadership ?(NOV/DEC 2016)**

When the leader's goals are not only permissible but also morally valuable then its known as Moral leadership

#### **6.what is meant by Globalization ?(NOV/DEC 2016)**

Our lives are increasingly dependent upon the goods/services provided over the world and are influenced by the business

from around all the corners of the world .in general world has become a global village and have good economy this is the concept of globalization

#### **7.What is the basic ethical and moral responsibility of a manager-engineer? Ethical responsibility:**

The basic ethical responsibilities of managers are to produce a good product or valuable service, only after taking into consideration maintaining respect for human beings, which includes customers, employees and the general public.

#### **Moral responsibility:**

As managers, engineer's moral responsibility is to produce safe and useful products that are also profitable

#### **8.What is meant by moral leadership ?(NOV/DEC 13)**

- A leader, by definition, is one who guides, who shows the way by example. A leader, if he is to be effective, must have the ability to persuade others. If there is no persuasion, there simply is no leadership.
- In order to be able to persuade others to follow a course of action, a leader must have personal integrity. If a man cannot be trusted, he cannot lead, for the populous will not be guided by someone in whom they have no confidence.

#### **9.Define the term „ Appropriate technology".(NOV/DEC 12)**

Appropriate technology means identification, transformation and implementation of the most suitable technology

for a new set of conditions. These conditions include social factors which are apart from economic and technical engineering constraints. Identification can be done on the basic of human values and needs.

#### **10. What is the Importance of IPR?**

Give the inventors exclusive rights of dealing

- Permit avoiding pf competitors and raise entry barriers.
- Permit entry to a technical market. Generate steady income by issuing license

#### **11.What is a Trade secret?**

A trade secret is a secret formula, pattern, or device that is used in a business and provides a commercial advantage.

#### **12.Differentiate External Whistle Blowing and Internal Whistle Blowing?**

External Whistle Blowing – Information is passed outside the organization.

Internal Whistle Blowing – Information is conveyed to someone within the organization.

#### **13.Differentiate Open Whistle Blowing and Anonymous Whistle Blowing?**

Open Whistle Blowing – Individuals openly reveal their identity as they convey the information

Anonymous Whistle Blowing – Involves concealing one's identity

#### **14.Define Employee Rights?**

Employee rights are rights, moral or legal, that involve the status of being an employee. They include some professional rights that apply to the employer-employee relationship

**15. When are Whistle Blowing morally permitted and morally obligated**

- Whistle blowing is morally permitted when
- If the harm that will be done by the product to the public is serious and considerable.
- If they make their concerns known to their superiors

**16. What are the three versions of Relativism?**

- Ethical Relativism
- Descriptive Relativism
- Moral Relativism

**17. What are the moral dimensions of an Engineer manager?**

- Information rights and obligation
- Property rights
- Accountability and control
- System quality

**18. Give any ten International rights suggested by Donaldson?(NOV/DEC 14)**

- 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.

**19. Give some of the Environmental issues of concern to engineers?**

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

**20. What are the issues in Computer**

**ethics? Power Relationship**

Job Elimination

Customer

Relations

Biased Software

Stock Trading

Unrealistic Expectations

Political Power

Military Weapons

**21. What are the problems of Defense industry?**

- Problem of waste and huge cost in implementing and maintaining a weapons system.
- Problem of Technology creep.
- Problems in maintaining secrecy.
- Every country allocates large amount of its resources to defense sector [India spent ¼ of its resource for defense]

**22. What are ways to promote an Ethical climate?**

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

**23. What are the important forms of Conflicts?**

- 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

**24. What is meant by technology transfer?**

- 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.

**25. What are the normative models to be used to avoid conflicts?**

- Hired Guns
- Value-neutral Analyst

**26. What are the characteristics of an engineer as expert advisers in public planning and policy making?**

- Honesty
- Competence
- Diligence
- Loyalty

**27. How can Deceptive advertising be done?**

- By outright lies.
- By half-truths.
- Through exaggeration.
- By making false innuendos, suggestions or implications.
- Through obfuscation created by ambiguity, vagueness or incoherence.
- Through subliminal manipulation of the unconscious.

**28. Give the usage of the code of conduct?**

The code of conduct will help the engineers to have a set of standards of behavior. They act as guidelines for their behavior. It helps to create workplaces where employees are encouraged to make ethical implications.

**29. Point out the responsibilities of consulting engineers?(NOV /DEC 2017)**

- Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.
- Engineers shall perform services only in the areas of their competence.
- Engineers shall issue public statements only in an objective and truthful manner.
- Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.
- Engineers shall build their professional reputation on the merit of their services and shall not compete unfairly with others.
- Engineers shall act in such a manner as to uphold and enhance the honor, integrity and dignity of the profession.
- Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional development of those engineers under their supervision.

**30. Enumerate the Code of Ethics by ASME?**

Engineers uphold and advance the integrity, honor and dignity of the engineering profession by:

- I. using their knowledge and skill for the enhancement of human welfare;
  - II. being honest and impartial, and serving with fidelity their clients (including their employers) and the public; and
  - III. striving to increase the competence and prestige of the engineering profession.
1. Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.
  2. Engineers shall perform services only in the areas of their competence;

they shall build their professional reputation on the merit of their services  
and shall not compete  
Unfairly with others.

**31. Define 'environmental ethics'[APR 2019]**

Study of moral issues concerning the environment, and the moral perspective, belief, or attitude concerning those issues

**32. Define CSR[APR 2019]**

Corporate Social Responsibility, or "CSR," refers to the need for businesses to be good corporate citizens. CSR involves going beyond the law's requirements in protecting the environment and contributing to social welfare. It is widely accepted as an obligation of modern business.

**PART-B  
Questions**

- 1 state the types of concern for environment by the engineers discuss the Approaches to resolve environmental problems What do professional codes of Ethics say about the environment ?(NOV/DEC 2017,APR 2019)**  
Refer Notes Pg(94-97)
- 2 What is computer Ethics? State and Explain the categories of ethical problems and the unethical acts computer as an instrument of unethical behavior What is meant by hacking?(NOV/DEC 2017,2019)**  
Refer Notes Pg(97-102)
- 3 Discuss in detail about the moral and ethical issues involved in use of computers ?(APRIL MAY 2017,2019)**  
Refer Notes Pg(97-95)
- 4 Explain the role of engineers as consultant and expert witness ?(APRIL/MAY 2017,2018,2019)**  
Refer Notes Pg(104-106)
- 5 Describe In details about the global issues of weapon development?(NOV/DEC 2016,APR/MAY 2018)**  
Refer Notes Pg(102)
- 6 Justify engineers as expert witness and advisors with suitable examples ?(NOV/DEC2016)**  
Refer Notes Pg(105-106)
- 7 What is environment ethics? Explain its significance. Give some of the environment issues of concern to engineers.( APR 15, MAY 14, NOV 13,MAY 2019)**  
Refer Notes Pg(94-97)
- 8 Discuss the various global issues that have an impact on business. ( APR 15)?**  
Refer Notes Pg(90-94)

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