

* Engineering ethics and Environment Protection (3151)

A text book on Professional Ethics and Human values,

- R. S. Nagarkar.

Objective of the course:-

- ① To understand the moral values that should guide the engineering profession.
- ② Resolve the moral issue in the profession.
- ③ Justify the moral judgement concerning the profession.
- ④ To maintain sustainable development.

→ Tutorial point (যারা কর পরিষ্কার করতে চাও)

→ Johnberg theory

→ Deligorge

→ Diderot's principle, selected for its relevance and importance.

Information, environment, culture, technology, labor and information

Date: 16/04/25

Moral: अंग्रेज़ लॉटन अथवा शुल्क MOS \Rightarrow custom.

Morals are the welfare principles enunciated by the wise people based on their experience and wisdom.

Values: A value is defined as a principle that promotes well-being or prevent harm.

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

Engineering: Engineering is the process of developing an efficient mechanism which quickens and eases the work with limited resources with the help of technology.

Profession: Profession is defined as an occupation / job/ vocation that requires advanced expertise, self regulation and services to the public good.

Engineering Ethics:— Engineering Ethics is defined by the codes and standards of conduct endorsed by the engineering societies with respect to the particular set of beliefs, attitudes, and habits displayed by individuals or group.

Scope of Engineering Ethics:— It is Two fold.

- (i) Ethics of the workplace (Internal)
- (ii) Ethics related to the product or service which involves transportation, warehousing, safety of end users, environmental effect.

Date: 21/04/25

Integrity ⇒ Integrity is defined as the unity of thoughts, work and deeds and open mindedness.

Virtue (ஈக்ட) —

Moral autonomy — Moral autonomy means self determination on independent.

Moral dilemma — Dilemmas are situations in which moral reasons come into conflict or in which the application of morals are problems, and one is not clear of the immediate solution of the problem.

Three situation leading to dilemma —

(i) Vagueness (ஏற்பாடு) — one is unable to distinguish between good or bad principal.

(ii) Conflicting reason — One is unable to choose between two good moral solution.

(iii) Problem of Disagreement — There may be many solutions but not mandatory. One has to interpret, apply different morally reasons, analyze and rank the solution.

Steps to solve Dilemmas —

1. Identification of moral factors and reasons.
2. Collection of information, data and facts relevant to the situation.
3. Rank the moral options.
4. Generate alternate course of actions to solve the dilemma.
5. Discuss with colleagues and obtain their opinion, priorities on alternative solutions.

6. If there is no ideal solution, arrive a partial solution.

Moral Development Theory

Kohlberg theory: There are 3 level to develop moral.

Ethics of
Rules.

- (i) Pre-conventional (No moral, No Law)
- (ii) Conventional (To show good side).
- (iii) Post-conventional. (opposite of Pre conventional)

Pre-conventional:— নিজের স্বাধীন কথা ফিল্ট করে, শেনের নিয়ম-
লোক মান না। (self-centered) Punishment (P
ain to motivate sb.) avoid করে।

Conventional:— নিজের প্রচলন পূর্ণ করে, আইন মেন নিজের স্বাধীন
করাত্ব।

Post-Conventional: Society এর স্বাধীন নেবা first করে, Super
moral.

Date: 28/04/25

Gilligan's theory:— female based. Emphasis on personal relation.
It's called. ethics of care.

Heinz's Dilemma=

Date: 05/05/25

CT-12/5/25 → Next Monday.

Ethical theories:

1. Utilitarian theory

2. Duty theory

3. Right theory

4. The virtue theory. 5. Self realization theory.

6. Justice/Fairness theory.

Utilitarian theory: proposed by John Stuart. According to this theory the happiness of pleasure of the greatest number of people in the society is considered as the greatest good. According to this philosophy, an action is morally right if its consequences lead to the happiness of people and wrong if they lead to their unhappiness.

Rights theory: Proposed by John Locke. According to this theory, the solution of a problem is by realizing that every person has a right to live. Live and let live is the philosophy behind this theory. The rights of a person towards life, health, liberty, possessions etc. are taken care of under this theory.

Duty theory: Proposed by Immanuel Kant. According to this theory Every person has a duty to follow which is universally accepted, with no exception. An example of this can be expecting all to be honest, kind, generous and peaceful. For example, we should be honest because honesty is required by duty. A businessman is to be honest because honesty pays - in terms of profits from customers and from avoiding jail for dishonesty.

Chapter - 4

Safety: Safety is defined as risk that is known and judged as acceptable.

Risk: Risk is a potential that something unwanted and harmful may occur. It is the result of an unsafe situation, sometimes unanticipated during its use.

Methods available to determine risk:

1. Testing on the function of the safety system components.
2. Destructive testing.
3. Prototype testing.
4. Simulation.

Safety testing =>

1. Scenario analysis: starting from an event; different consequences are studied.

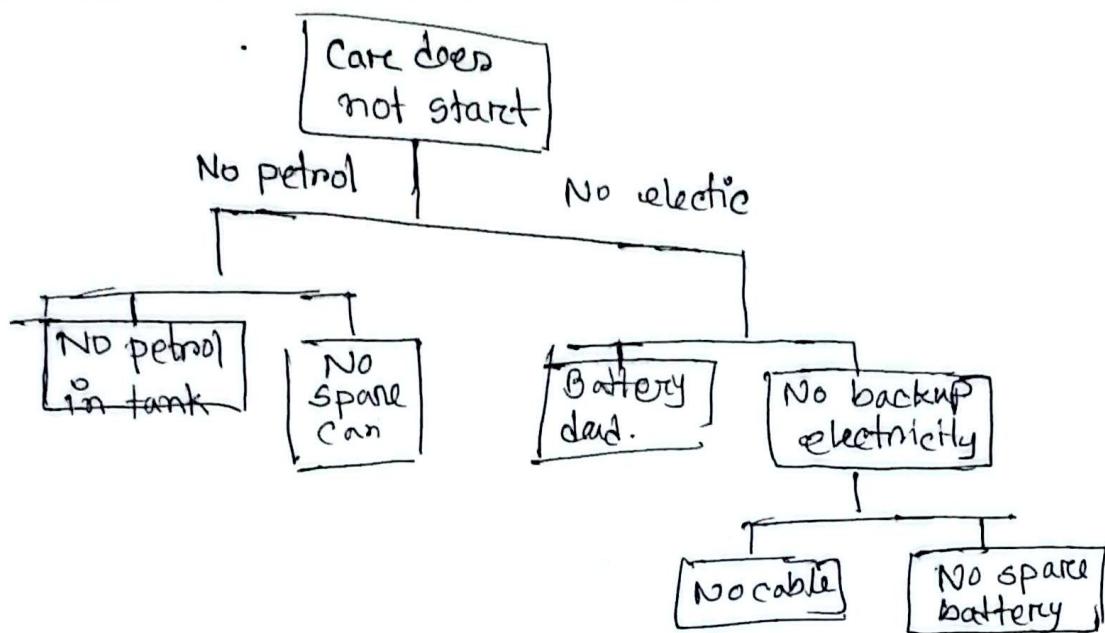
For example, a disaster recovery plan for an organization is discussed.

① \Rightarrow Probability and size of loss is big then risk is high.

Fault Tree Analysis (FTA):

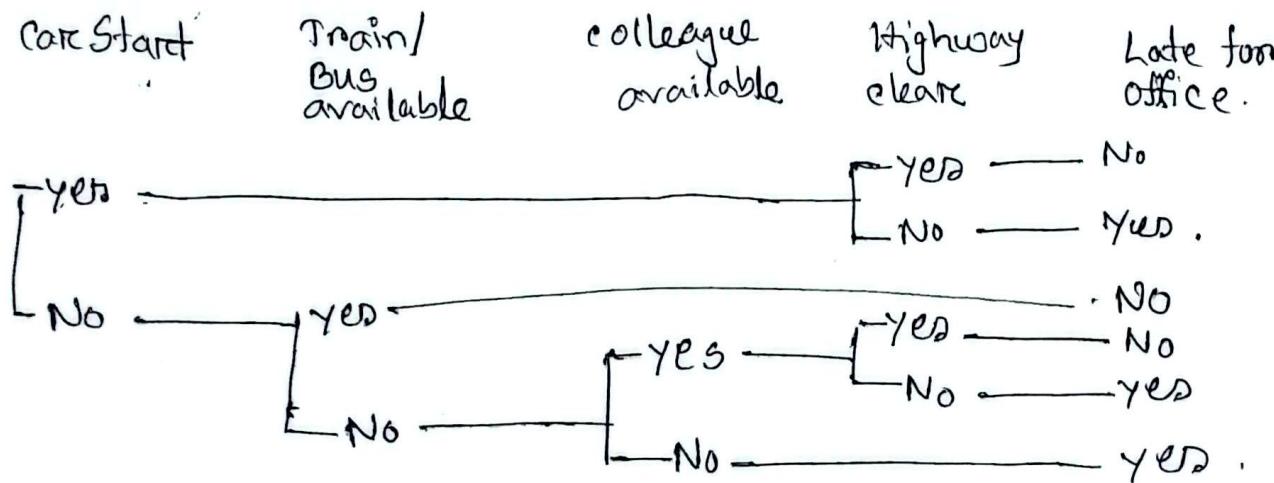
Bell technology

It is a technology-based deductive logic. The failure is initially defined and the events leading to the failure are identified at different component level.



Event Tree Analysis (ETA): Inverse of FTA . It is mainly used for consequence analysis and in identifying hazardous situation in a system.

Example: ETA for going ~~late~~ to late in a office



Probability Safety = 1 - Probability of Risk.

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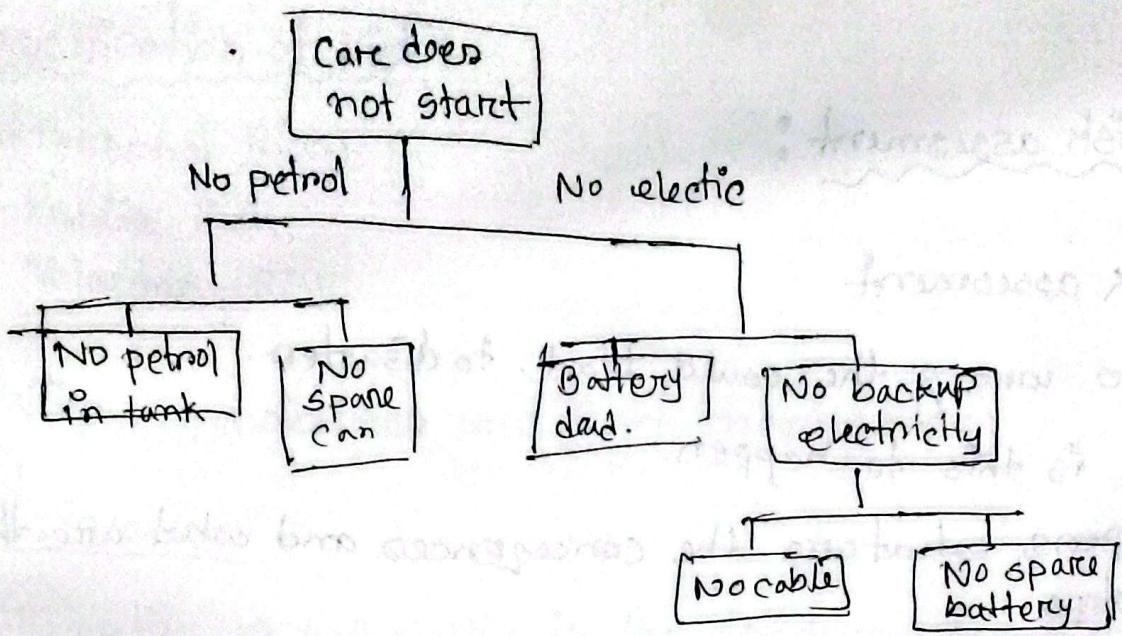
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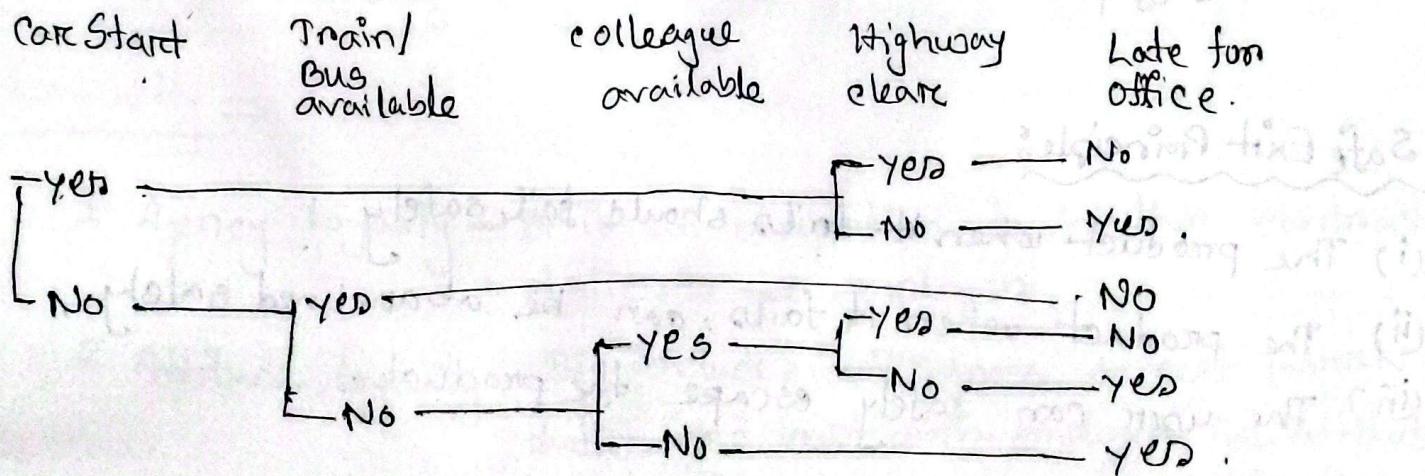
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Date: 12/05/25

Safety and Risk assessment:

Steps for risk assessment

1. What can go wrong the could lead to disasters.
2. How likely is this to happen.
3. If it happens, what are the consequences and what are the recovery steps.

Uncertainties in assessment:-

1. Restrictions of access to proper data.
2. Uncertain behavior of materials.
3. Varying behavior of user environment.
4. Misuse of product.

Safe Exit Principles

- (i) The product when it fails should fail safely.
- (ii) The product when it fails, can be abandoned safely.
- (iii) The user can safely escape the product.

Risk-benefit analysis:-

Reasons for risk-benefit analysis

1. To know risk and benefit and weigh them each.
2. To decide on design, the product/project.
3. To suggest and modify the design.

Classification of Risk:

1. Personal Risk.
2. Public Risk.
3. Voluntary Risk.

Safies Responsibilities and Rights (chapter Name)

Date: 10/05/25

Collegiality \Rightarrow Collegiality is the tendency to support and co-operate with the colleagues.

This consists of various aspects -

- (i) Respect to the idea and works of others.
- (ii) Commitment to moral principles
- (iii) Connectedness - it ensures the absence of egoism and paves the way of good of all.

Loyalty \Rightarrow

1. Agency Loyalty - It is an obligation to his/her contractual duties to the employers.
2. Attitude Loyalty - It includes willingness to meet moral duties and trust with employer. The attitude loyalty is more a virtue than obligation.

Conflict of interest: A conflict of interest occurs when the employee has more than one interest.

1. Actual conflict of interest.
2. Apparent conflict of interest.
3. Potential conflict of interest.

Bribe/gift:

Blonlighting :- प्रकृति भोग ग्राहक अवस्था की company के लिए उपलब्ध है।

- Disadvantage

- Company ने - information का रख दिया था।

Insiders information:-

Date: 21/05/25

Occupational Crime : may be committed by -

- Wrong actions of a person through one's lawful employment
- Crime by an employee to promote one's own or employer's interest.
- Theft or pilferage by the employee
- Damaged to the property of an employee of own organization.

Example of occ Crime:

1. Price fixing.

2. Industrial Espionage :- Spying own or company's ~~best~~ benefit.

3. Bootlegging: Manufacturing, storing and transporting of illegal goods.

4. Endangering lives:

Employee's right : Moral and legal rights by the status of being an employee.

1. Right to privacy :
2. Right to choose outside activity
3. Right to due process from employer.
4. Right to equal opportunity.

Date: 26/05/25

Whistle Blowing:

Conveying information by an employee on an important moral problem to somebody in a position to take action on the problem. This is done outside the approved organization.

When Whistle Blowing is justified:-

1. When the potential harm existing is identified as serious or anticipated to occur with a high probability in the future.
2. When sufficient data on the harm had been gathered and documented.
3. Concerns have been reported to the immediate supervisors but no satisfactory response was received within a reasonable time.
4. Regular channel has been used to transport the information to the highest level and the information has reached them.
5. There is a reasonable hope that it can prevent or remedy the harm.

Instruction before blowing whistle :

1. One should know the rules of applying within the organization.
2. Consult trusted colleagues for advise to avoid isolation.
3. Use polite and tactful language.
4. keep your supervisor informed your action through informal actions.
5. keep your observations and claims precise.
6. Consult the ethics committee of your professional organization.
7. Consult a Lawyer regarding potential litigation.
8. Offering to resign.

Intellectual Property right: It is the information and expression that derives its original value from creative.

Need of IP:

- ① It prevents others using it.
- ② Prevent using it from financial gain.
- ③ Prevent plagiarism.
- ④

Prevents:

1. patent

2. Copyright

3. Trademark

Date: 25/06/25

Environment Ethics: Environment ethics is the study of

- (a) moral issues concerning the environment and
 - (b) moral beliefs, attitudes concerning those issues.

Duties towards environment issues:

- (i) Environment impact assessment.
 - (ii) Establish standard.
 - (iii) Counter measure.
 - (iv) प्रदूषको व्यवस्था
Environment awareness.

Sustainable Development: Development that meets the needs of present without compromising the ability of future generations to meet their own need.

- ① Extraction of raw material from earth.
 - (ii) Manufacture and use.
 - (iii) Final disposal.

C2C / Biomimicry .

cradle to cradle thinking.

Date: 30/06/25

Computer Ethics :- Computer ethics is the study of the nature and social impact of computer technology and.

(b) formulation and justification of policies for ethical use of computers.

Types of issues :-

- (i) Computer as the instrument of unethical acts.
- (ii) Computer as the object of unethical Act.
- (iii) Problems related to the autonomous Nature of Computer.

Unethical Acts:

- (i) Hacking (ii) Spreading of virus (iii) Health Hazards.

→ Security Risk:

→ Loss of human lives.

Computers in workplace

- (i) Elimination of routine and manual jobs.
- (ii) Health and Safety
- (iii) Computer failure.

Computer Crime :-

1. Physical security.
2. logical security.
 - (a). the privacy of individuals or organization.
 - (b) Confidentiality.
 - (c) Integrity