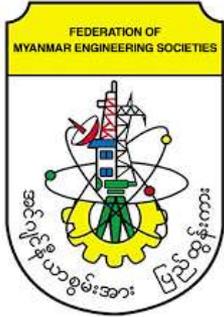


Federation of Myanmar Engineering Societies



Knowledge Sharing Program



*Ethical Decision - Making in Engineering Practice:
A Structured Approach to format the NCEES”*

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Fed. MES, Yangon

31st, Aug , 2024

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Introduction (1)

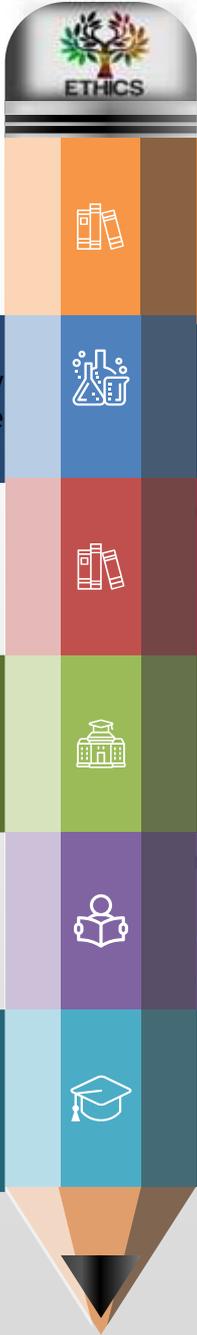
Ethics & Disciplinary Committee

Engineering ethics, as outlined by the National Society of Professional Engineers (NSPE), is rooted in the ethos of “Building tomorrow, safeguarding today” committed to not only technology and innovation but to do so to engineering for Safety, Healthy and Human Welfare.

- Character Building
- Personal Integrity
- Decision Making
- Respect for Others
- Social Responsibility
- Trust and Credibility
- Personal Growth
- Long-term Success

Engineering ethics is the field of applied ethics and system of moral principles that apply to the practice of engineering. The field examines and sets the obligations and standards that govern the professional conduct of engineers, focusing on the responsibility to society, to their clients, and profession itself.

Introduction (2)



01
Ethics is the rational reflection on philosophical study of morality, including the principles of right and wrong, the theory of values (goodness and badness') and the theory of virtue and vice, in terms of human behavior..

02
Ethics in engineering is the ability as well as responsibility of an engineer to judge his decisions from the context of the general wellbeing of the society.

03
Morality is the moral belief and practices of culture, community, or religion or code or system of moral rules, principles, or values.

04
Code of ethics is the written set of guidelines issued by an organization to its workers and management to help them conduct their actions in accordance with its primary values and ethical standards.

05
Engineers are expected to maintain high standards of ethical conduct, in their professional lives, by the society and their profession.

06
Engineering ethics are principles and guidelines for engineers following to ensure their decision-making is aligned with their obligations to the public, their clients, and the industry.

Introduction (3)

From Ego to Eco: A shift in Engineering Ethics;

➤ Traditional Engineering Ethics

- Focus on human well-being and public safety
- Minimize negative impacts on the environment

➤ The Rise of Eco-Ethics

- Reorganization of the interconnectedness of all things.
- Emphasis on Sustainability and environmental protection
- Broader consideration of stakeholders

➤ Eco-centric Engineering

- Challenges : Balancing human needs with environmental concerns
- Opportunities : Creation a more sustainable future



Basic comparative table outlining the essentials and standards between Ethics and Morals

Aspect	Ethics	Morals
Definition	Rules or principles that govern conduct within a group or society	Personal principles of right and wrong based on individual beliefs
Source	External (societal norms, professional codes, laws)	Internal (Individual beliefs, cultural influences)
Flexibility	More flexible, can change with society or professional standards.	More rigid often deeply ingrained and resistant to change.
Scope	Broader, applicable to groups, professions and societies.	Narrower, focused on Individual behavior and choices
Enforcement	Enforced by external bodies (courts, professional organizations)	Self-enforced or enforced by social pressure within a community.
Examples	Professional codes of conduct, legal regulations.	Personal beliefs about honesty, integrity, and kindness.
Objective vs Subjective	Generally considered more objective, based on agreed-upon standards.	More subjective, varying greatly between individuals and cultures.
Purpose	To ensure fair and just practices in a societal or professional context.	To guide individual behavior in personal and social contexts.

Basic comparative table outlining the differences between ethics and law in the context of engineering

Aspect	Ethics	Law
Definition	Moral principles governing professional conduct	Legal requirement set by governmental authorities
Purpose	Ensure responsible, fair and just behavior	Ensure compliance with societal rules and regulations
Scope	Broad, covering all aspects of professional behavior	Specific, focusing on compliance with laws and regulations
Enforcement	Professional societies and internal codes of conduct	Government agencies and legal systems
Examples	Confidentiality, conflict of interest, public welfare	Building codes, safety regulations, environmental laws
Flexibility	Often subjective and context-dependent	Generally right and must be followed
Consequences	Loss of reputation, professional sanctions	Legal penalties, fines, imprisonment
Key Documents	Codes of ethics (e.g., NSPE Code of Ethics)	Statutes, regulations, and standards



Engineering Ethics

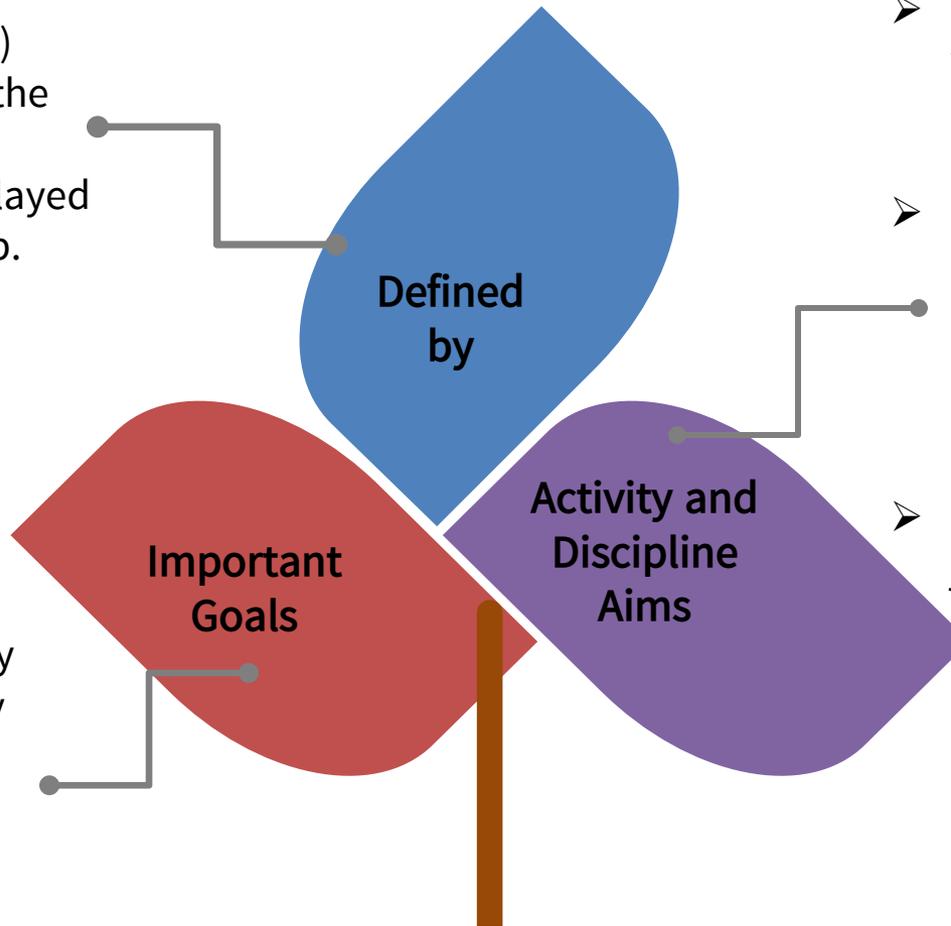
- 1 The study of moral principles, issues and decisions confronting individuals and organizations involved in engineering.
- 2 The study of related questions about moral conduct, character and relationships of peoples and organizations involved in technological development.
- 3 The statement of principles made by an engineering organization to aid its members in serving their ethical obligations to society.
- 4 The set of standards that cover engineers' responsibility to the public, clients, employers and profession.
- 5 The investigation of what is right or wrong, just or unjust, good or bad, virtue or vice in engineering profession.

Applied form of ethical standards which apply to any engineering occupation (ethical duties of honesty, fair dealing with other people, obeying the relevant laws,---

Engineering Ethics

The codes and standards of conduct endorsed by engineering (professional) societies with respect to the particular set of beliefs, attitudes and habits displayed by the individual or group.

- The discovery of the set of justified moral principles of obligation, rights and ideals that ought to be endorsed by the engineers and apply them to concrete situation.
- To be accountable for their decisions and actions affect all areas of our lives, namely public safety, healthy and welfare.



- Understanding the moral values that ought to guide engineering profession or practice.
- Resolving moral issue and decisions confronting individuals and organizations engaged in engineering, and
- Justifying the moral judgements concerned with moral problems and issues in engineering practice.

Engineering ethics in professional

practice



Guidelines for ethical decision making (Ref: WFEO Ethics Model)

(A). Demonstrate integrity

- Retain from fraudulent, corrupt or criminal practices, avoid ethical risks in practice.
- Be objective and truthful.
- Practise fairly and with good faith towards clients, colleagues and others stakeholders.

(B). Practise competently

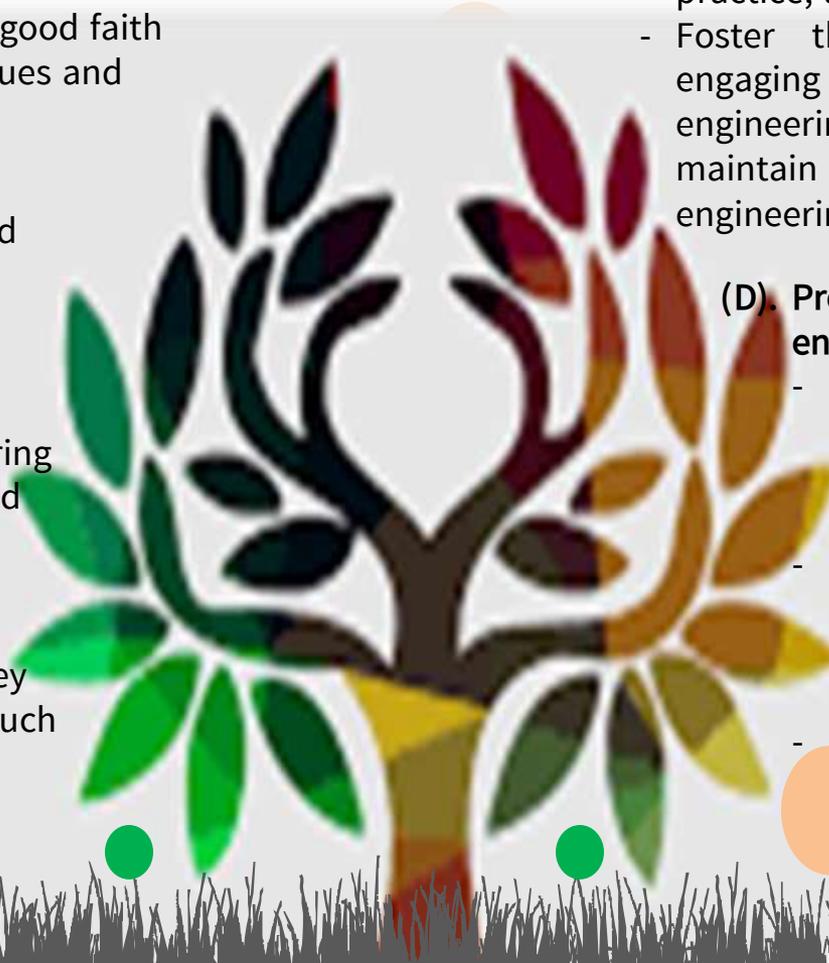
- Practise in a careful and diligent manner in accordance with their areas of competence.
- Practise in accordance with accepted engineering practices, standards and codes.
- Maintain and strive to enhance the body of knowledge in which they practice and keep in touch with the constantly updated specialized knowledge including digital technology.

(C). Exercise leadership

- Practise so as to enhance the quality of life and bridge the gaps in society.
- Strive to contribute to the advancement of the body of knowledge within which they practice, and to the profession in general.
- Foster the public's understanding and engaging of technical issues and the engineering significance appropriately, maintain the public image of the engineering profession.

(D). Protect the natural and built environment

- Create and implement engineering solutions for a sustainable future of humankind and the planet.
- Be mindful of the possible economic, societal and environmental consequences of actions or projects.
- Promote and protect the peace, health, safety, privacy, dignity and common well being of the community and the environment.



Ethical Priority

Specifically, the ethics of engineering dealing with others shall be considered in the following order from highest to lowest priority.

- Society and the public
- The law, rule and regulation
- The engineering profession
- The engineer's client
- The engineer's firm
- Other involved engineers
- The engineer personally

Dealing With (And Affecting) Society and the Public

In regard to the social consequences of engineering, the relationship between an engineer and the public is essentially straightforward. Responsibilities to the public demand that the engineer place service to humankind above personal gain. Furthermore, proper ethical behavior requires that an engineer avoid association with projects that are contrary to public health and welfare or that are of questionable legal character.

Dealing With (And Affecting) Society and the Public

Engineers shall :

consider the safety, health, and welfare of the public in all work performed.

identify, assess, and mitigate risks associated with their projects to prevent accidents and failures that could harm the public.

ensure quality assurance that all materials, processes, and systems to meet high-quality standards, to avoid defects and malfunctions.

have transparency with communicating potential risks and safety concerns clearly to stakeholders, including the public and authorities.

enhance public health, such as clean water systems, medical devices, pollution control, environmental protection with technologies and innovative solutions.

ensure public welfare with accessibility to all segments of society , sustainability to contribute the long-term public welfare and social responsibility .

Dealing With (And Affecting) Society and the Public contd;

Engineers shall :

consider the safety, health, and welfare of the public in all work performed.

uphold integrity in all professional dealings , avoiding conflicts of interest and refusing to engage in fraudulent or deceptive practice . Engineers shall uphold the highest ethical standards and dignity of their profession by refraining from self-laudatory advertising, by explaining (when required) their work to the public, and by expressing opinions only in areas of their knowledge.

must clearly indicate if the statement is being made on anyone's behalf When engineers issue a public statement. (i.e., if anyone is benefitting from their position).

keep their skills at staying updated with the latest developments, standards, and best practices in engineering to ensure ongoing public safety, health, and welfare.

engage with the community to understand their needs and concerns, and involving them in decision-making processes when appropriate.

develop public knowledge and appreciation of the engineering affecting public safety and welfare are made (a practice known as whistle-blowing).

Dealing With state government law, rule and regulation

Engineering ethics extends beyond the professional and technical aspects to encompass broader societal responsibilities ensuring that engineers contribute positively to state government law, rule and regulation, security, the economy, and national identity.

- Engineers shall adhere to laws, rules and regulation set by the government, They are responsible for ensuring that their work complies with legal standards, including safety, environmental, codes and standards.
- Engineers working in IT and software development shall need to ensure cyber security with protecting sensitive data and national security Civil and structural engineers should design and maintain infrastructure to withstand natural disasters and potential attacks.
- Engineers shall promote economic growth and sustainability by designing efficient, cost-effective system, minimize waste and environmental impact.
- Engineers shall respect and incorporate local cultural and social contexts in their work, contributing to national identity and pride, improving the quality of life for citizens.

Dealing With Clients, Employers

The most common ethical guidelines affecting engineers' interactions with their employer (the client) can be summarized as follows.

- Engineers **shall** not accept assignments for which they do not have the skill, knowledge, or time to complete.
- Engineers **shall** recognize their own limitations. They **shall** use associates and other experts when the design requirements exceed their abilities.
- The client's interests **shall** be protected. The extent of this protection exceeds normal business relationships and transcends the legal requirements of the engineer-client contract.
- Engineers **shall** not be bound by what the client wants in instances where such desires would be unsuccessful, dishonest, unethical, unhealthy, or unsafe.
- Confidential client information remains the property of the client and must be kept confidential.

Dealing With Clients, Employers Contd;

- Engineers **shall** avoid conflicts of interest and **shall** inform the client of any business connections or interests that might influence their judgment.
- Engineers **shall** also avoid the appearance of a conflict of interest when such an appearance would be detrimental to the profession, their client, or themselves.
- The engineers' sole source of income for a particular project **shall** be the fee paid by their client. Engineers **shall** not accept compensation in any form from more than one party for the same services.
- If the client rejects the engineer's recommendations, the engineer **shall** fully explain the consequences to the client.
- Engineers **shall** freely and openly admit to the client any errors made.

Dealing With Employees

- Engineers shall treat all employees with respect and fair. Engineers shall foster a workplace free of harassment, discrimination, and bullying.
- Engineers shall provide guidance, training, and opportunities for professional growth to subordinates and colleagues.
- Engineers shall encourage a collaborative work culture, valuing the contributions of team members, and promoting open communication.

Sample short questions and answers on engineering ethics, focusing on competency priority and the NCEES (National Council of Examiners for Engineering and Surveying format:

Question 1:

What is the primary obligation of an engineer according to the MEng.C Code of Ethics?

Answer: The primary obligation of an engineer according to the MEng.C (Myanmar Engineering Council) Code of Ethics is to hold paramount the safety, health, and welfare of the public.

Question 2:

How should an engineer handle a situation where a client requests them to seal plans that were prepared by another engineer without reviewing them?

Answer: The engineer should refuse to seal the plans without conducting a thorough review to ensure they meet the necessary standards and regulations. Sealing plans without adequate review violates professional and ethical responsibilities.

Question 3:

What steps should an engineer take if they discover a potential safety issue in a project they are working on?

Answer: The engineer should immediately report the potential safety issue to their supervisor or the appropriate authority. They should ensure that the issue is addressed promptly to protect public safety, even if it results in project delays or additional costs.

Question 4:

Can an engineer accept a gift from a contractor, and if so, under what circumstances?

Answer: An engineer should avoid accepting gifts from contractors or any party that could influence their professional judgment. Any gift that could be perceived as a conflict of interest or could compromise their integrity should be declined. (or)

Answer: Engineers should avoid accepting gifts from contractors if such gifts could influence their professional judgment or create a conflict of interest. Small tokens of appreciation may be acceptable if state laws and regulations permit and the gift does not appear to affect professional decisions.

Question 5:

What should an engineer do if they are asked to perform tasks that are outside their area of expertise?

Answer: The engineer should decline to perform tasks that are outside their area of expertise and recommend that a qualified professional be consulted. They should only undertake tasks for which they are competent and qualified through education, training, and experience.

Question 6:

How should an engineer act if they discover that their employer is violating environmental regulations?

Answer: The engineer should report the violation to the appropriate regulatory authorities. They should document their findings and ensure that they take all necessary steps to stop the violation, prioritizing environmental and public welfare.

Question 7:

What is the role of honesty and integrity in an engineer's professional practice?

Answer: Honesty and integrity are fundamental to an engineer's professional practice. Engineers must be truthful in the reports, statements, and testimony, and should avoid any conduct that is misleading or deceptive.

Question 8:

How should an engineer manage a conflict of interest situation?

Answer: The engineer should fully disclose any potential or actual conflicts of interest to their clients, employers, and any affected parties. They should take steps to mitigate the conflict and ensure that their professional decisions are not compromised.

Question 9:

What responsibility does an engineer have when providing public statements on engineering matters?

Answer: When providing public statements on engineering matters, an engineer should ensure that the statements are accurate, truthful, and based on sound engineering principles. They should avoid making statements that could mislead or misinform the public.

Question 10:

If an engineer suspects unethical behavior by a colleague, what steps should they take?

Answer: The engineer should report the suspected unethical behavior to the appropriate authority within their organization or to the relevant professional engineering body. They should provide evidence to support their claims and ensure that their actions are in line with professional and ethical standards.

Question 11:

An engineer is asked to sign off on a project they did not supervise or review. What should the engineer do according to MEng.C Code of Ethics?

Answer : The engineer should refuse to sign off on the project. According to the MEng.C Code of Ethics, engineers should only approve documents that they have prepared, reviewed, or supervised directly.

Question 12:

An engineer discovers a critical safety issue in a project they are working on. What is their ethical obligation?

Answer: The engineer has an ethical obligation to report the safety issue to the appropriate authorities and ensure it is addressed, as public safety is a paramount concern under the MEng.C Code of Ethics.

Question 13:

What should an engineer do if they realize a colleague is violating the state engineering board's regulations?

Answer: The engineer should report the violation to the appropriate state licensing board or authority, following the MEng.C Code of Ethics and state laws, to protect the public and maintain the integrity of the profession.

Question 14:

An engineer is asked to use a new material that is not covered by existing codes and standards. What steps should they take?

Answer: The engineer should thoroughly research and document the material's properties and ensure that its use will not compromise safety or performance. They should seek guidance from peers, relevant experts, and possibly consult with the state licensing board if needed.

Question 15: An engineer wants to advertise their services. What ethical considerations must they keep in mind?

Answer: The engineer must ensure that their advertising is truthful, not misleading, and does not make deceptive or exaggerated claims. They should adhere to both the MEng.C Code of Ethics and state laws regarding professional advertising.

Question 16:

Can an engineer practice in a state where they are not licensed?

Answer: No, an engineer must be licensed in the state where they are practicing. Practicing without a license violates state laws and the MEng.C Code of Ethics.

Question 17:

What should an engineer do if they asked to reduce their fees significantly, potentially compromising the quality of the work?

Answer : The engineer should refuse to reduce their fees if it would compromise the quality, safety, or integrity of their work. Maintaining high professional standards and public safety is a priority according to the MEng.C Code of Ethics.

Question 18:

How should an engineer handle confidential information obtained during the course of their work?

Answer: An engineer should maintain the confidentiality of any sensitive information obtained during their work and only disclose it when authorized or required by law. This aligns with the MEng.C Code of Ethics and state regulations on confidentiality.

Question 19:

What are the consequences for an engineer found guilty of professional misconduct by a state licensing board?

Answer: The consequences can include fines, suspension, or revocation of their engineering license, and possible legal action. Professional misconduct is taken seriously to uphold the integrity and safety standards of the engineering profession.

Question 20: An engineer is approached by a client who requests a design that violates local building codes. What should the engineer do?

Answer : The engineer should refuse to comply with the request and inform the client about the legal and safety implications of violating building codes. The engineer must adhere to the principles of public safety and code compliance.

Question 21:

An engineer discovers a critical flaw in a project after it has been signed off by their employer. What is the ethical course of action?

Answer : The engineer should immediately inform their employer about the flaw, regardless of potential repercussions. Ensuring the integrity and safety of the project takes precedence over any other considerations.

Question 22:

An engineer working for a company is offered a lucrative side job by a competing firm. What should the engineer consider before accepting?

Answer: The engineer must consider potential conflicts of interest and obtain consent from their current employer. They should also ensure that accepting the side job does not compromise their primary job responsibilities or confidentiality agreements.

Question 23:

An engineer is assigned a project outside their area of expertise. What is the appropriate action?

Answer: The engineer should decline the assignment and recommend that it be given to someone with the appropriate expertise. Engineers must perform services only in their areas of competence as per the MEng.C guidelines.

Question 24:

An engineer is offered a gift by a supplier who is bidding on a project. What should the engineer do?

Answer : The engineer should refuse the gift to avoid any appearance of a conflict of interest or impropriety. Acceptance of gifts can compromise an engineer's objectivity and professional judgment.

Question 25:

An engineer learns confidential information about a client's upcoming project. Another client asks about potential future projects in the area. How should the engineer respond?

Answer : The engineer should not disclose any confidential information and should maintain the confidentiality of all client information. They can provide general industry insights without revealing specific client details.

Sample multiple-choice questions and answers focused on engineering ethics, professional obligations, and practices, formatted similarly to NCEES ethics questions.

Question 1:

An engineer discovers a critical flaw in a project they have worked on, which could potentially endanger the public. The project is near completion, and halting it would incur significant costs. What should the engineer do?

- A. Ignore the flaw to avoid costly delays and trust that the chances of failure are minimal.
- B. Report the flaw to their supervisor and recommend immediate action to rectify it.
- C. Attempt to fix the flaw discreetly without informing anyone to avoid any negative repercussions.
- D. Document the flaw but do nothing further since the project is almost complete.

Answer 1:

- B. Report the flaw to their supervisor and recommend immediate action to rectify it.

Explanation of Answers

- 1.(B) Engineers have an ethical obligation to protect public safety, health, and welfare. Reporting the flaw is crucial to ensuring these standards are met.

Question 2:

An engineer is offered a substantial gift by a contractor in exchange for ensuring that the contractor's bid is accepted for a new project. What is the appropriate course of action for the engineer?

- A. Accept the gift and ensure the contractor's bid is accepted, as it will benefit both parties.
- B. Refuse the gift and report the incident to their employer.
- C. Accept the gift but do not let it influence the decision-making process.
- D. Decline the gift but take no further action, to avoid potential conflicts.

Answer 2:

- B. Refuse the gift and report the incident to their employer.

Explanation of Answers

2.(B) Accepting gifts in exchange for favors can create conflicts of interest and violate ethical standards. Reporting the offer maintains integrity.

Question 3:

An engineer becomes aware that a colleague is sealing and signing design documents that they have not reviewed. What should the engineer do?

- A. Ignore the situation as it is not their responsibility.
- B. Discuss the matter privately with the colleague and encourage them to review the documents.
- C. Report the behavior to the appropriate professional or regulatory body.
- D. Sign the documents themselves to ensure that they are reviewed properly.

Answer 3:

C. Report the behavior to the appropriate professional or regulatory body.

Explanation of Answers

3.(C) Signing and sealing documents without proper review is a serious ethical violation. Reporting it ensures adherence to professional standards.

Question 4:

An engineer is asked to perform a task that falls outside of their area of expertise. What is the ethical course of action?

- A. Accept the task to maintain a good relationship with their employer.
- B. Perform the task to the best of their ability, relying on self-study to fill in gaps in knowledge.
- C. Refuse the task and suggest someone more qualified to handle it.
- D. Delegate the task to a junior engineer and supervise them closely.

Answer 4 :

C. Refuse the task and suggest someone more qualified to handle it.

Explanation of Answers

4.(C) Engineers should only perform tasks within their area of expertise to maintain professional integrity and public safety.

Question 5:

During an inspection, an engineer finds that the materials used in construction do not meet the specified standards. The project manager insists that the materials are adequate and that replacing them would cause significant delays. What should the engineer do?

- A. Approve the materials to keep the project on schedule.
- B. Insist on replacing the materials to meet the specified standards.
- C. Document the issue and proceed with construction as directed by the project manager.
- D. Suggest a compromise where only the most critical materials are replaced.

Answer 5:

- B. Insist on replacing the materials to meet the specified standards.

Explanation of Answers

5.(B) Ensuring materials meet specified standards is essential to maintaining safety and quality in engineering projects.

Sample multiple-choice questions and answers focusing on ethical responsibilities and challenges in sustainable engineering, formatted similarly to NCEES ethics questions.

Question 6:

An engineer is tasked with designing a new building in a rapidly developing urban area. The engineer knows that using certain sustainable materials will reduce the building's environmental impact but will also increase costs. What should the engineer consider when making this decision?

- A. Use the cheapest materials to ensure the project stays within budget.
- B. Select the sustainable materials, emphasizing the long-term environmental benefits.
- C. Choose a mix of standard and sustainable materials to balance cost and sustainability .
- D. Use standard materials and suggest future retrofitting for sustainability .

Answer 6:

- B. Select the sustainable materials, emphasizing the long-term environmental benefits.

Explanation of Answers

6.(B) Engineers have a responsibility to consider long-term environmental impact sustainability in their designs.

Question 7:

An engineering firm is developing a new project near a protected wetland. The project manager pressures the environmental engineer to downplay the potential environmental impact in the report to expedite project approval. What is the appropriate action for the environmental engineer?

- A. Comply with the project manager's request to avoid conflict and ensure job security.
- B. Refuse to alter the report and accurately present the potential environmental impacts.
- C. Modify the report slightly to balance between environmental concerns and project needs.
- D. Submit the original report and notify relevant environmental authorities of the pressure to alter it.

Answer 7:

B. Refuse to alter the report and accurately present the potential environmental impacts.

Explanation of Answers

7.(B) Engineers must maintain integrity and provide accurate information about environmental impacts, even under pressure .

Question 8:

An engineer is working on a project to develop a new green energy source. During testing, the engineer discovers that the new technology has unforeseen negative effects on local wildlife. What should the engineer do?

- A. Halt the project and report the findings to stakeholders and regulatory bodies.
- B. Continue the project while working on solutions to mitigate the negative effects.
- C. Ignore the issue and proceed, assuming the benefits of the green energy source outweigh the drawbacks.
- D. Document the issue privately but do not disclose it to avoid project delays.

Answer 8:

- A. Halt the project and report the findings to stakeholders and regulatory bodies.

Explanation of Answers

8.(A) Engineers should prioritize the protection of the environment and report any negative impacts of new technologies.

Question 9:

An engineer is part of a team designing a new transportation system that promises to reduce carbon emissions. However, the construction of this system will displace several local communities. What should the engineer prioritize in their ethical decision-making?

- A. Focus on the environmental benefits and proceed with the project.
- B. Engage with the local communities to find a solution that minimizes displacement.
- C. Abandon the project to avoid displacing the communities.
- D. Proceed with the project but compensate the displaced communities adequately.

Answer 9:

- B. Engage with the local communities to find a solution that minimizes displacement.

Explanation of Answers

9.(B) Ethical decision-making in engineering should balance environmental benefits with social impacts, engaging with affected communities to find solutions.

Question 10:

An engineering consultant is hired to assess the environmental sustainability of a new manufacturing process. The client pressures the consultant to produce a favorable report, despite evidence that the process may be harmful to the environment. What should the consultant do?

- A. Produce a favorable report to satisfy the client and secure future business.
- B. Conduct a thorough assessment and provide an honest report based on the findings.
- C. Slightly modify the report to highlight only the positive aspects of the process.
- D. Decline to complete the assessment to avoid potential conflicts.

Answer 10:

- B. Conduct a thorough assessment and provide an honest report based on the findings.

Explanation of Answers

10.(B) Providing honest and thorough assessments maintains professional integrity and upholds ethical standards in engineering.

Sample sentence or word matching questions and answers focusing on engineering ethics canons and rules of practice, formatted similarly to NCEES ethics questions.

Question 1:

Match the following ethical principles with their correct descriptions:

1. Canon 1: Hold paramount the safety, health, and welfare of the public.
 2. Canon 2: Perform services only in areas of their competence.
 3. Canon 3: Issue public statements only in an objective and truthful manner.
 4. Canon4: Act for each employer or client as faithful agents or trustees.
-
- A. Ensuring honesty and integrity in all public communications.
 - B. Prioritizing the well-being of the community in all professional decisions.
 - C. Limiting professional services to areas where the engineer is qualified.
 - D. Upholding loyalty and trust in client and employer relationships.

Answer 1 :

- 1-B: Prioritizing the well-being of the community in all professional decisions.
- 2-C: Limiting professional services to areas where the engineer is qualified.
- 3-A: Ensuring honesty and integrity in all public communications.
- 4-D: Upholding loyalty and trust in client and employer relationships.

Explanation of Answers

1.(1B, 2C, 3A, 4D) This matching ensures each ethical principle is associated with its correct description, helping to understand the foundations of engineering ethics.

Question 2:

Match each scenario with the most appropriate ethical canon or rule of practice it exemplifies:

1. An engineer refuses to sign off on a structural design they did not review.
 2. An engineer discloses a potential conflict of interest to their employer before accepting a new project.
 3. An engineer conducts a thorough environmental impact assessment before starting a construction project.
 4. An engineer continues to stay updated with new technologies in their field.
- A. Canon 2: Perform services only in areas of their competence.
 - B. Canon 3: Issue public statements only in an objective and truthful manner.
 - C. Canon 1: Hold paramount the safety, health and welfare of the public.
 - D. Canon 4: Act for each employer or client as faithful agents or trustees.
 - E. Rule of Practice: Engineers shall continually strive to improve their competence and the competence of others.

Answer 2:

1. A: Canon 2: Perform services only in areas of their competence.
2. D: Canon 4: Act for each employer or client as faithful agents or trustees.
3. C: Canon 1: Hold paramount the safety, health, and welfare of the public.
4. E: Rule of Practice: Engineers shall continually strive to improve their competence and the competence of others.

Explanation of Answers

2.(1A, 2D, 3C, 4E) These scenarios are matched with the appropriate canon or rule, illustrating practical applications of ethical standards.

Question 3:

Match the following actions with the corresponding ethical canon or rule:

1. Providing accurate and truthful public statements about project outcomes.
 2. Reporting a colleague's unethical behavior to the appropriate authority.
 3. Using only certified materials in construction to ensure public safety.
 4. Refraining from participating in project outside one's area of expertise.
- A. Canon 1: Hold paramount the safety, health, , and welfare of the public.
 - B. Canon 3: Issue public statements only in an objective and truthful manner.
 - C. Canon 2: Perform services only in areas of their competence.
 - D. Rule of Practice: Engineers shall act in professional matters for each employer or client as faithful agents or trustees.

Answer 3:

1. B: Canon 3: Issue public statements only in an objective and truthful manner.
2. D: Rule of Practice: Engineers shall act in professional matters for each employer or client as faithful agents or trustees.
3. A: Canon 1: Hold paramount the safety, health, and welfare of the public.
4. C: Canon 2: Perform services only in areas of their competence.

Explanation of Answers

3.(1B, 2D, 3A, 4C) This matching exercise aligns actions with ethical canons and rules, demonstrating the importance of maintaining professional integrity and competence.

Sample sentence or word matching questions and answers focusing on engineering ethics professional obligations, formatted similarly to NCEES ethics questions.

Question 4:

Match each professional obligation with its correct description:

1. Confidentiality
 2. Conflict of Interest
 3. Competence
 4. Public Welfare
-
- A. Ensuring that any information about a client's business or personal matters is not disclosed without consent.
 - B. Refraining from participating in projects where personal interests could impair professional judgment.
 - C. Maintaining and improving technical skills and knowledge to perform services proficiently.
 - D. Prioritizing the health, safety, and welfare of the public in all professional actions.

Answer 4:

1. A: Ensuring that any information about a client's business or personal matters is not disclosed without consent.
2. B: Refraining from participating in projects where personal interests could impair professional judgment.
3. C: Maintaining and improving technical skills and knowledge to perform services proficiently.
4. D: Prioritizing the health, safety, and welfare of the public in all professional actions.

Explanation of Answers

4.(1A, 2B, 3C, 4D) This matching ensures each professional obligation is associated with its correct description, helping to understand the foundations of ethical practice in engineering.

Question 5:

Match each scenario with the most appropriate professional obligation it exemplifies:

1. An engineer declines a project because it involves technologies they are not familiar with.
 2. An engineer ensures that a client's proprietary design is not shared with others.
 3. An engineer discloses to their employer that they own stock in a company bidding on a project.
 4. An engineer designs a building with enhanced safety features, even though it increases costs.
-
- A. Competence
 - B. Confidentiality
 - C. Conflict of Interest
 - D. Public Welfare

Answer 5:

1. A: Competence
2. B: Confidentiality
3. C: Conflict of Interest
4. D: Public Welfare

Explanation of Answers

5.(1A, 2B, 3C, 4D) : These scenarios are matched with the appropriate professional obligation, illustrating practical applications of ethical standards.

Question 6:

Match the following actions with the corresponding professional obligation:

1. Providing truthful and complete reports on project findings.
2. Informing a client about potential risks associated with a proposed project.
3. Avoiding giving expert opinions on topics outside one's expertise.
4. Disclosing personal relationships that might influence project outcomes.

- A. Public Welfare
- B. Competence
- C. Conflict of Interest
- D. Integrity

Answer 6:

1. D: Integrity
2. A: Public Welfare
3. B: Competence
4. C: Conflict of Interest

Explanation of Answers

6.(1D, 2A, 3B, 4C) : This matching exercise aligns actions with professional obligations, demonstrating the importance of maintaining integrity, competence, and transparency in engineering practice.

Question 7 :

Match each priority with its correct description:

1. Society and Public :
 2. Law, Rules, and Regulations:
 3. Engineering Profession:
 4. Client Firms:
 5. Other Engineers:
 6. Personal Conduct.
-
- A. Maintaining honesty, integrity, and professionalism in all personal actions and decisions.
 - B. Prioritizing public health, safety, and welfare in all engineering activities.
 - C. Complying with all applicable laws, rules, and regulations governing professional practice.
 - D. Acting with fairness and respect towards colleagues and other professionals.
 - E. Serving clients with integrity, honesty, and fidelity.
 - F. Upholding and enhancing the reputation and standards of the engineering profession.

Answer 7 :

1. B: Prioritizing public health, safety, and welfare in all engineering activities.
2. C: Complying with all applicable laws, rules, and regulations governing professional practice.
3. F: Upholding and enhancing the reputation and standards of the engineering profession.
4. E: Serving clients with integrity, honesty, and fidelity.
5. D: Acting with fairness and respect towards colleagues and other professionals.
6. A: Maintaining honesty, integrity, and professionalism in all personal actions and decisions.

Explanation of Answers

7. 1B, 2C, 3F, 4E, 5D, 6A: This matching ensures each priority is associated with its correct description, helping to understand the foundations of ethical practice in engineering.

Question 8:

Match each scenario with the most appropriate ethical priority it exemplifies:

1. An engineer ensures their work complies with environmental regulations and industry standards.
2. An engineer refuses to approve a project plan that could potentially harm the local community.
3. An engineer transparently discloses a conflict of interest to their client.
4. An engineer actively participates in continuing education to stay updated with technological advancements.
5. An engineer avoids accepting bribes or engaging in corrupt practices.
6. An engineer collaborates respectfully and openly with a multidisciplinary team.

A. Society and Public

B. Law, Rules, and Regulations

C. Engineering Profession

D. Client Firms

E. Other Engineers

F. Personal Conduct

Answer 8:

1. B: Law, Rules, and Regulations
2. A: Society and Public
3. D: Client Firms
4. C: Engineering Profession
5. F: Personal Conduct
6. E: Other Engineers

Explanation of Answers

8. 1B, 2A, 3D, 4C, 5F, 6E: These scenarios are matched with the appropriate ethical priority, illustrating practical applications of ethical standards.

Question 9:

Match the following actions with the corresponding ethical priority:

1. Reporting safety concerns about a construction project to the relevant authorities.
2. Adhering to local building codes and safety regulations.
3. Mentoring young engineers and promoting professional growth.
4. Providing honest and complete information to clients regarding project risks.
5. Respecting the intellectual property rights of colleagues.
6. Refusing gifts from suppliers to avoid potential conflicts of interest.

- A. Society and Public
- B. Law, Rules, and Regulations
- C. Engineering Profession
- D. Client Firms
- E. Other Engineers
- F. Personal Conduct

Answer 9:

1. A: Society and Public
2. B: Law, Rules, and Regulations
3. C: Engineering Profession
4. D: Client Firms
5. E: Other Engineers
6. F: Personal Conduct

Explanation of Answers

9. 1A, 2B, 3C, 4D, 5E, 6F: This matching exercise aligns actions with ethical priorities, demonstrating the importance of maintaining integrity, compliance, professionalism, and collaboration in engineering practice.

Question 10:

Match each term related to conflicts of interest with its correct description:

1. Disclosure
 2. Recusal
 3. Bias
 4. Transparency
- A. The act of making known any personal interest that could affect one's professional judgment.
 - B. Withdrawing from a decision-making process to avoid a conflict of interest.
 - C. A predisposition that can affect impartiality and objectivity in professional decisions.
 - D. The practice of being open and honest about potential conflicts to maintain trust.

Answer 10:

- A: The act of making known any personal interest that could affect one's professional judgment .
- B: Withdrawing from a decision-making process to avoid a conflict of interest.
- C: A predisposition that can affect impartiality and objectivity in professional decisions.
- D: The practice of being open and honest about potential conflicts to maintain trust .

Explanation of Answers

10. 1A, 2B, 3C, 4D : This matching ensures each term is associated with its correct description, helping to understand the foundations of ethical practice in managing conflicts of interest.

Question 11:

Match each scenario with the most appropriate term related to conflicts of interest:

1. An engineer informs their employer about owning stock in a company that is bidding on a project.
2. An engineer steps aside from a project selection committee because their spouse works for one of the applicant firms.
3. An engineer ensures that all personal investments are declared to avoid any perception of unfair advantage.
4. An engineer makes decisions on a project where they have a financial interest, which could affect their impartiality.

- A. Transparency
- B. Bias
- C. Recusal
- D. Disclosure

Answer 11:

- D: Disclosure
- C: Recusal
- A: Transparency
- B: Bias

Explanation of Answers

11. 1D, 2C, 3A, 4B : These scenarios are matched with the appropriate term related to conflicts of interest, illustrating practical applications of ethical standards.

Question 12:

Match the following actions with the corresponding ethical response to conflicts of interest:

1. Reporting a potential conflict of interest to relevant stakeholders.
 2. Declining to participate in a review process where a family member is involved.
 3. Documenting all possible personal interests related to a project.
 4. Acknowledging and avoiding situations where personal gain could influence professional decisions.
-
- A. Recusal
 - B. Avoidance
 - C. Disclosure
 - D. Transparency

Answer 12 :

1. C: Disclosure
2. A: Recusal
3. D: Transparency
4. B: Avoidance

Explanation of Answers

12.1C, 2A, 3D, 4B : This matching exercise aligns actions with ethical responses to conflicts of interest, demonstrating the importance of maintaining integrity, transparency, and impartiality in engineering practice.

Sample True or False type ethics questions and answers focusing on fundamental principles, canons, and rules of practice, formatted similarly to NCEES ethics questions:

Fundamental Principles

1. Engineers shall hold paramount the safety, health, and welfare of the public in the performance of their professional duties.

Answer : True

2. It is acceptable for engineers to approve plans and documents that do not meet established engineering standards if instructed by their employer.

Answer : False

Canons

3. Engineers shall perform services only in areas of their competence.

Answer : True

4. Engineers may affix their signatures to plans or documents dealing with subject matter in which they lack competence if the plans or documents were prepared under their direct supervision.

Answer : False

5. Engineers shall act for each employer or client as faithful agents or trustees.

Answer : True

6. Engineers are permitted to disclose confidential information concerning the business affairs or technical processes of any present or former client without the client's consent.

Answer : False

Rules of Practice

7. Engineers shall avoid deceptive acts.

Answer : True

8. An engineer who is a principal or employee of a company must disclose any potential conflicts of interest that could influence their judgment or the quality of their services.

Answer : True

9. Engineers may receive compensation from more than one party for services on the same project without disclosing the circumstances to all interested parties.

Answer : False

10. Engineers shall not falsify their qualifications or permit misrepresentation of their or their associates' qualifications.

Answer : True

Sample True or False type ethics questions and answers focusing on professional obligations, formatted similarly to NCEES ethics questions:

Professional Obligations

11. Engineers shall avoid conflicts of interest with their employers or clients.

Answer : True

12. Engineers are permitted to accept assignments from multiple clients on projects that have conflicting interests without informing the respective clients.

Answer : False

13. Engineers shall not solicit or accept gratuities, directly or indirectly, from contractors, their agents, or other parties dealing with their clients or employers in connection with work for which they are responsible.

Answer : True

14. Engineers should continue their professional development throughout their careers and provide opportunities for the professional development of those under their supervision.

Answer : True

15. If an engineer becomes aware of a decision that adversely affects the safety, health, and welfare of the public, they have an obligation to notify their employer but do not need to take any further action.

Answer : False

16. Engineers are allowed to misrepresent their academic or professional qualifications to enhance their employability.

Answer : False

17. Engineers should issue public statements only in an objective and truthful manner.

Answer : True

18. Engineers can disclose confidential information obtained in the course of their assignments unless the information pertains to illegal activities.

Answer : False

19. Engineers shall acknowledge their errors and shall not distort or alter the facts.**

Answer : True

20. Engineers are required to participate in civic affairs and work for the advancement of the safety, health, and well-being of their communities.

Answer : True

21. Engineers can use their professional skills to commit fraud or deception if they believe it will ultimately benefit their employer or client.

Answer : False

22. Engineers must cooperate with others in the profession and encourage the ethical dissemination of engineering knowledge.

Answer : True

These questions are intended to assess an engineer's understanding of their professional obligations and ethical responsibilities as per standard engineering codes of ethics.

Here are some sample True or False type ethics questions and answers focusing on ethical priority, formatted similarly to NCEES ethics questions:

Ethical Priority

23. When faced with a conflict between safety and cost, engineers must prioritize safety, health, and welfare of the public over cost considerations.

Answer : True

24. If an employer asks an engineer to take actions that compromise public safety, the engineer must comply to keep their job.

Answer : False

25. Engineers must prioritize reporting unsafe conditions even if it means breaching client confidentiality.

Answer : True

26. An engineer should prioritize their loyalty to their employer over their obligation to report unethical conduct.

Answer : False

27. Engineers must refuse to comply with directives from an employer if those directives violate the engineer's professional obligations to the public welfare.

Answer : True

28. Engineers should prioritize their own financial gain over the ethical standards of the profession when the opportunity arises.

Answer : False

29. When reviewing the work of another engineer, it is ethical to prioritize the integrity of the work over personal relationships or professional courtesy.

Answer : True

30. In the case of a potential conflict of interest, engineers must prioritize transparency and disclosure over personal or employer interests.

Answer : True

31. Engineers should prioritize adhering to the law over maintaining confidentiality when the two are in conflict.

Answer : True

32. Engineers can prioritize meeting project deadlines over thoroughly checking their work if they are under significant time pressure.

Answer : False

33. When ethical guidelines conflict with the engineer's personal beliefs, the engineer must still prioritize the ethical guidelines.

Answer : True

34. In prioritizing their professional obligations, engineers should always prioritize public safety, health, and welfare above all other considerations.

Answer : True

Conclusion

01

The engineering code of ethics refers to a basic set of principles that establishes a standard of conduct for engineers in their duties.

02

The code of ethics ensures that engineers preserve society and protect the public in all their endeavors.

03

The Engineering code of ethics is important to bring the maximum good or benefit to the society and to the enterprise as well.

04

The ethical code of ethics can improve the quality of working and can secure the public interest towards any Engineering practice, judgement , interpretation and balanced decision making

05

It can lead the Engineering towards the adoption of sustainable working , in order to do “good things” in a manner which is right and set out the principles on the values.





*Thank you
for your kind
Attention and Suggestion!*

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