

ENGINEERING PROFESSIONAL PRACTICE



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SOCIOLOGY:

SOCIOLOGY:

- Sociology- the term was coined by French Philosopher in 1839 (Latin word "societus meaning "society" and Greek word "logos" meaning "study of Science")
- "Sociology is the study of the interrelationships between man and his human environment" (H.P. Fairchild)
- Sociology is the science of society.

SOCIETY:

Society, is a group of people with a common and somewhat distinct culture, who occupy a particular territorial area, have a feeling of unity and regard as distinguishable entity.

Society.....

Criteria of society-

- Has a population
- The population must occupy a common territory
- The population must share the same government or political authority
- The population must have a common culture and a sense of relationship and commitment to the same group.

Elements of society-

- ❖ Plurality- composed of population of all ages, sexes, and groups of various economic status.
- ❖ Stability- a permanent character
- ❖ Likeness- earlier blood relationships was considered likeness to recognize the member of society, these days, nationality.
- ❖ Differences-interest, ages, sexes, opinions etc.
- ❖ Interdependences- dependent to each other. Eg- mother take care of child untill he/she becomes able to feed him/herself.
- ❖ Cooperation- mutual cooperation/help tp each others.

Characteristics of Society

- **Society consists of people:** Society is composed of people. No people no society.
- **Mutual inter action and mutual awareness:** Society is the process whereby men interpenetrate the minds of each other, Individuals are in continuous interactions with other individuals of the society. Social inter action take place with mutual awareness.

Characteristics of Society

- Society depends on likeness, Mutual understanding (Earlier based on kinship- blood relationship, now nationality) etc.
- Society rests on the differences. Difference: Difference is opinion, interest, genders etc. in social lives .
- Co-operation and division of labor
- Dynamic: Changeability is the inherent quality of society. No society can ever remain constant or static for length of time.

Characteristics of Society

- Social Control: Society has its own ways of controlling the behaviour of its members. Customs, traditions, law, police, court etc.
- Culture: Every society is unique because it has its own ways of life called culture. It includes our attitude, judgments, moral ideas etc.

There is indefinite interplay of

- ❖ Likeness and difference
- ❖ Cooperation and conflicts
- ❖ Agreements and dissents etc

Characteristics of Society

- Interdependence and cooperation are important elements of society.
- Members of society depends on each other in many ways and extend cooperation.
- Family is an example of interdependency. Today even the countries depend on each other.

Community

- ❑ "Whenever the members of any group, small or large, live together in such a way that they share, not this or that particular interest, but the basic conditions of a common life, we call that group a community" (MacIver)

Community

- ❑ "any circle of people who live together and belong together in such a way that they do not share this or that particular interest only, but a whole set of interest" (Mannheim)
- ❑ "A community is that collectivity the members of which share a common territorial area as their base of operation for daily activities" (Talcott Parson)

Community

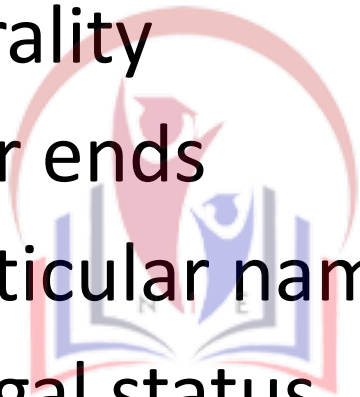
- **Definition:** Community is the geographical area having common centers of interests and activities.
- Community is essentially an area of social living marked by some degree of social coherence.
- Community is a social group that may be may a small or large, the members of which lives together in such a way that they share not this or that particular interest but the basic condition of a common life.

Elements of Community

- i. Group of People: when individual live together sharing the basic conditions of common life they obviously form a community.
- ii. Locality/ Definite territory: Group of people forms a community when it begins to reside in a definite locality.
- iii. Community Sentiment/ close social relationship: A community is essentially an area of common living with a feeling of belonging together
- iv. Cultural similarity (Likeness)
- v. Organized similarity: festival, mela etc.

Elements of Community

- vi. Permanency (Solidity or lastingness)
- vii. Naturality
- viii. Wider ends
- ix. A Particular name
- x. No legal status



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Ethics

- **Ethics** can be defined as the science of rightness and wrongness of conducts in purposive action which involves choices and will.
- It is the expression of character that is settled habit of will. The will is the self in action.
- Thus, ethics is the science of human character as expressed in right or wrong conduct. Rightness and wrongs refers it the good, which are the ideas of human life.
- Thus ethics is the science of high test good. It is the science of morality.

Ethics

- It sneaks to teach us how we can pass correct moral judgment upon human conduct and consider it as right or wrong with reference to supreme ideal of human life.
- **Ethics** is the science of the ideal involved in human life. It is science of high test good of man. There are three ideas of human life, beauty and good.

Moral and non moral (immoral) action

- Moral is concerned with human behaviors and the established norms in the society.
- Moral means the standards of behaviour accepted by the culture and religion of the society.
- Moral qualities are the behaviour that drives the society forward.
- Non-moral is naturally the devoid of moral quality.

Moral and non moral (immoral) action

- All actions are not object of moral judgment.
- Only voluntary and habitual actions of rational personality objects of moral judgment; we cannot speak of the phenomenon of the nature, eg hurricane, floods famines etc moral or immoral.
- The actions of animal are neither moral nor immoral.

Profession

- A profession can be defined as the systematic knowledge acquired through specialized training or education .
- Profession is synonym to job or occupation.
- Profession helps providing specialized type of services for the needy person or community.

Features of Profession

1. Systematic knowledge and skills:

A profession requires systematic knowledge and skill. Without acquiring systematic knowledge and processing certain skills, the occupation cannot be a profession. Thus medicine, engineering, law are considered as profession.

Features of Profession

2. Authenticity of knowledge and skill/ specialized types of services:

Because of their knowledge and skills, professionals do have authority and are also honored by the clients.

Professionals provide specialized do have some authority and are also honored by the clients.

Features of Profession

Professionals provide specialized type of service to the ordinary people that they do not understand.

In this regard , professionals get the authority of implementing or utilizing their knowledge or skills on those ordinary people .

Hence, the ordinary people have to honor them.

Features of Profession

3. It is a public property and matter of public evaluation:

- Professional practice of a professional is subjected to public evaluation.
- Their clients are always watching each and every professional behaviour and practice, hence, a professional's activity usually become a matter of public evaluation.
- General people always discuss about the practicing doctors or engineering their behaviors on the society.
- In this way, a professional becomes a public property and their clients them to be honorable.

Features of Profession

4. Bound by code of ethics:

There will be a code of ethics to regulate the relationship between professionals, clients and colleagues .

Professional are required to maintain high morale and high standard of behaviors on the society.

They are not free to act as what they desire .

Their personal and professional behaviors are controlled by the code of ethics prepared by the professional associations/societies.

Features of Profession

5. Every profession has some set of behavior that is similar of the other people of the same profession:

There will be professional culture developed by professional organizations. Every professional do have some set of behaviour that are similar to the other person of the same profession.

For example, the different can be seen between the behaviour of the engineers or the behaviors of the lawyers.

Their professional societies or the communities help maintain such culture.

Factors affecting the morale of the profession/ engineering

1. Salary
2. Social norms/ values
3. Low morale (state of despair hopelessness)
4. Implementation of the laws and regulation
5. Lack of political commitment

Professional engineering

- **Professional engineering** can be defined in various ways.
- However we can say that the practice of professional engineering is any act of designing, composing evaluating advising reporting, directing, supervising where in the safeguarding of life, health and property or the public welfare is concerned and that requires the application of engineering principles but does not include practicing's a natural scientist

- *Nepal engineering council act, 2055* defines the engineering as the occupation which is done by the engineers.
- The engineer has been defined as a person having graduate degree in engineering from the institute reorganized by the council.

Codes of ethics and guideline for professional engineering practice

1. A code ethics governs the conduct of all practitioners.
2. It endures that engineers practice within their realm of expertise they do so in a fair and ethical manner and they place the good of society above their personnel gain.
3. This is a means by which engineer governs themselves.
4. It is privileged earned over the years through knowledge, experience and trust.

Five fundamental ethical values for codes of ethics

1. Protection of life and safeguarding people.
2. Sustainable management and care for the environment.
3. Community well being
4. Professionalism , integrity and competence
5. Sustaining engineering knowledge.

Rules of conduct:

Professional Engineers (PEs) shall:

1. Have proper regard in all their work for the safety and welfare of all persons and for the physical environment affected by their work.
2. Undertake only work that they are competent to perform by virtue of training and experience and shall express opinions on engineering matters only on the basis of adequate knowledge and honesty convictions.
3. Sign and seal only reports , plans or documents that they have prepared under their direct supervision and controls.

Rules of conduct...

- 4. Act for their clients or employers as faithful agents or trustees :always acting independently and with fairness and justice to all participants.
- 5. Not engage in activities or accepts remuneration for services rendered that may create a conflict of interest with their clients or employers without the knowledge and consent of their clients or employers.
- 6. Not disclose confidential information without the consent of their clients or employers unless the withholding of information is considered contrary to the safety of the public.

Rules of conduct...

- 7. Present clearly to their clients or employers the consequence to be expected if their professional judgment is overruled by other authorities in matters pertaining to work for which they are professionally responsible
- 8. Not offer accept the covert (hidden) payment for the purpose of securing an engineering assignment.

Rules of conduct...

9. Present their qualification competence or advertise professional service only through factual representation without exaggeration.
10. Conduct themselves towards other professional engineers and towards employees and other with fairness and good faith.
11. Report unprofessional practice

Rules of conduct:

Professional engineers shall:

1. Public safety and welfare
2. Competence knowledge
3. Sealing and signing
4. Faithful agent and trustee
5. Conflict of interest
6. Overruled by judgment
7. Professional advertisement
8. Securing assignment
9. Conduct through clients
10. Confidentiality of information
11. Reporting professional practice

Four secular systems

Four secular systems or method for making ethical proper and good decisions:

1. **Utilitarianism**: the principle to be followed is that of beneficiaries . A decision or act is right or good only if it generates amount of benefit for the largest number of people at the lowest cost or harm to others.
2. **Universalism** the principal to be followed is of consistency. A decision is right or good if everyone faced with the same set of circumstance should be expected to make the same decision.

Four secular systems...

3. **Distributive justice** – a belief in the primacy of justice. A decision is good and proper if the least advantage member of the society somehow enjoy a better standard of living the decision compared to as they did before.
4. **Personal liberty**- value of liberty. A decision is right or good only if all members of our society somehow have a greater freedom to develop their own lives after the decision.

1. Definition of Professional Engineering

- Professional Engineering can be found defined in various ways.
- The practice of Professional Engineering is any act of designing, composing, evaluating, advising, reporting, directing or supervising where in safe guarding of life, health, property or public welfare is concern and that requires the application of engineering principal but does not include practicing as a natural scientist.

1. Definition of Professional Engineering...

- Nepal Engineering council Act, 2055 defined the engineering professional as the occupation which is done by the engineers.
- The Engineer has been defined as a person having graduate degree in engineering from the institution recognized by the council.

2. Professional Bodies

- The professional engineering body is an independent body that regulates the practice of professional engineering and governs its member in accordance with the statute of the body and law (related act) of the country in order to serve and protect the public interest.

2. Professional Bodies....

- Example: Nepal Engineers' Association (NEA)
- Society of Structure Engineers of Nepal (SOSEN),
- Society of Public Health engineers' of Nepal (SOPHEN),
- Society of Electrical Engineers' of Nepal (SOEEN),
- Society of Mechanical Engineers' of Nepal (SOMEN),
- Society of electronics and communication engineers' Nepal (SECEN) etc.

3. Objectives of Professional Association

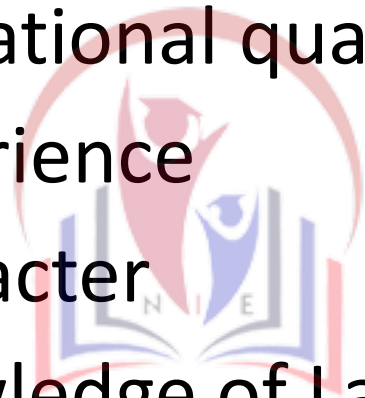
- In general the purpose of the association should be to regulate the practice of professional engineering governs its members holders of certificate of authorization, holders of temporary licenses and holders of limited licenses in accordance with the Act of the country or province in order that the public interest can be served and protected.

3.1 The principal objectives:

1. Center of Learning: Library, professional interest network etc.
2. Provider of professional status with responsibility for the ethics of the engineering professions
3. Voice of Profession: Lobbying government and promoting engineering
4. A facilitator of best practices: providing training and recruitment

3.2 General requirement for the membership of an association

- i. Citizenship
- ii. Educational qualification
- iii. Experience
- iv. Character
- v. Knowledge of Law
- vi. Language and competency



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4. Nepal Engineers' Association

4. Nepal Engineers' Association

- It is the generic apex national body of Nepalese engineers of various disciplines.
- It is an independent body and nonprofit organization.
- It attempts to regulate effectively the practice of professional engineering in the national development.

4. Nepal Engineers' Association

- It was established in 2024 BS (1968 AD)
- It governs its members in accordance with the statute of the body and law (related act) of the country in order to serve and protect the public interest.
- It safeguards the right and strengthens the professional capacity of engineer.

4.1 Objective of Nepal Engineers' Association

- 1.To facilitate proper development and mobilization of engineering science and technology in Nepal.
- 2.To promote mutual cooperation, interaction and goodwill among Nepalese Engineers and safeguard their interest and rights.
- 3.To ensure maximum participation of Nepalese engineers in the national development activities with an effort to put an end to foreign dependency.

4.1 Objectives of Nepal Engineers' Association

4. To continuously enhance the highest professional ideas among its members.
5. To establish linkages, cooperation and goodwill with other international engineering institutions.

4.2 Benefit of Membership

- Member of the association has numerous benefits of a personal and professional nature.
- Benefits of professional nature;
- **The association:**
- provides a focus for the profession maintaining professional standards and complying with international rules of professional conduct.
- offers worldwide recognizes qualification and support and advice required to achieve them.

4.2 Benefits of Membership

- i. Allocates funds for local activities
- ii. Gives training advises and conduct generic training courses
- iii. Arranges regular meeting and visit to centre and chapter to hear local views
- iv. Provides training facilities
- v. Provides Wide Range of Engineering Information Journals , Newsletters etc.

4.2 Benefit of Membership

- vi. Publish Journal, Newsletter, Proceeding Etc.
- vii. Offers Library as A Room of Leading
- viii. Offers National Program of Conference, Seminars, Workshop and Lectures.
- ix. Offers arbitration and conciliation services

Benefits of personal nature

As a member you can

- i. Participate in a comprehensive technical program of our field of interest
- ii. Enjoy a wide range of technical visits and social functions
- iii. Contribute to the future of your profession
- iv. Have your views included in major responses to draft policy
- v. Have compressive guidance to become professional engineer

Benefits of personal nature

- vi. Have a basis for continue professional development
- vii. Have access in the international recognition, status and networking opportunities through overseas partnership and reciprocal agreements
- viii. Give views on professional issues to the politicians , government and civil society
- ix. Participate in short term and long-term training
- x. Meet professional colleagues at all levels
- xi. Keep up to date with what is happening in the profession

Benefits of personal nature

- xii. Initiate technical papers or articles about project you are working on.
- xiii. Maintain good contact with the media and promote wide: image with the public.
- xiv. Assist in the training of other engineers
- xv. Supports school, college and university visits
- xvi. Benefit from excellent awards.

Benefits of personal nature

- xvii. Utilizing the services and facilities of association.
- xviii. Get member from the discounts and other service from different sectors in the society.
- xix. Have wider range of linkage, opening a new horizon for career advice and employment opportunities.
- xx. Be proud of your profession.

4.3 Code of Ethics of Engineers

- Nepal Engineers' Association adopted code of ethics for its fellow member in Chaitra 2025.

According to NEA

Fundamental principle of professional engineering ethics

- i. Upholding and advancing engineering profession.
- ii. Keeping high standards of ethical conduct.

4.3 Code of Ethics of Engineers...

Quality of engineers to adhere with above principles:

Engineer

- i. Will be honest and fair and serve employ, clients and public.
- ii. Will dedicate to the advancement of competence of engineering profession and to disseminate engineering knowledge.
- iii. Will use knowledge and skill in the service of humanity

4.3 Code of Ethics of Engineers...

- The code also directs the relationship of Nepalese Engineer with public employers and fellow engineers

1. Relation with Public

The engineer

- i. Will have proper regard for the health safety and welfare of public in performing his professional duties
- ii. Will endeavor to extend knowledge and appreciation of engineering its achievements and its achievement and oppose any untrue unsupported or exaggerated regarding engineering

4.3 Code of Ethics of Engineers...

1. Relation with Public

Engineer

- iii. Will be dignified and modest in explaining his work and merit and refrain from misrepresentative or self – laudatory advertisement.
- iv. Will express an opinion on an engineering subject.

4.3 Code of Ethics of Engineers...

2. Relation with employers and clients

The engineer:

- i. Will act as faithful agent or trustee for employer or client.
- ii. Will not accept compensation or remuneration from more than one party same service or service pertaining same work , without the consent of all interest parties.
- iii. Will inform his employer or client of his financial interest in any vendor or contractor and this should not affect to his services.

4.3 Code of Ethics of Engineers...

2. Relation with employers and clients

The engineer:

- iv. Will indicate employer the adverse consequences if his judgment is overruled.
- v. Will undertake only those engineering assignments for which is qualified.
- vi. Will not disclose information concerning business affairs or technical processes

4.3 Code of Ethics of Engineers...

2. Relation with employers and clients

- vii. Will not divulge any confidential findings of studies or action of any commission or board in which he is member.
- viii. Will not exert undue influence or offer solicit or accept compensation for the purpose of affecting negotiations for on engineering engagement.

4.3 Code of Ethics of Engineers...

3. Relations with Engineers

The engineer

- i. Will take care that credit for engaged works is given to those directly responsible for.
- ii. Will provide complete information on working condition and status of employment.
- iii. Will upload the principle of appropriate and adequate for those engaged in engineering works

4.3 Code of Ethics of Engineers...

- iv. Will endeavor opportunity for professional development and advancement of fellow engineer under his supervision.
- v. Will not attempt to injury falsely or maliciously professional reputation prospects or practice of other engineer.
- vi. However, he has proof that engineer has been unethical, illegal or unfair in his practice he should so advise to proper authority.

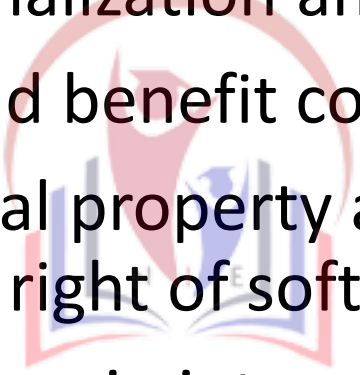
4.3 Code of Ethics of Engineers...

- vii. Will not use the advantage of salaried position to compete unfair with other engineer.
- viii. Should give due regards to all professional aspects of the engagements
- ix. Will not attempt to supplant other engineer in a particular engagement
- x. Will not review the work of other engineer for the same client expect with knowledge of such engineer
- xi. Will cooperate in advancing the engineer

CONTEMPORARY ISSUE AND PROBLEM IN ENGINEERING

1. Intellectual property rights, copyrights and patent rights

- Intellectual property is the original creative works that have economic value and are protected by law.
- Patent act defines patent as an invention of “any new and useful art, process, machine, manufacture or composition of matter or any new and useful improvement in any art process, machine, or manufacture” .
- Copyright means the sole right to produce or re produce the work, or any substantial part thereof in any materials form or whatsoever.

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2. Issues on Engineering professional ethics.
3. Industrialization and protection of environment.
4. Risk and benefit consideration in public transportation.
5. Personal property and large computerized data bases. (Dues to the patent right of software it is becoming costly)
6. Engineers in international development.

OCCUPATIONAL HEALTH AND SAFETY

- **The concept of occupational safety and health is still new in Nepal.**
- **It has not been a hot agenda in industrial field where only about 7 percent of the labour force are involved where this provision is insignificant in other sectors other than industry.**
- **The high illiteracy among the workers, lack of awareness, poor performance or inattention of the concerned government authorities in implementation of OSH related policies and activities have shadowed these issues.**
- **To date, the OSH has not become the prior agenda for all the stakeholders of this sector.**

OSHA (occupational Safety and Health Act) regulations

- Occupational Safety and Health Administration (OSHA) is an agency of the [United States Department of Labor](#).
- Congress established the agency under the [Occupational Safety and Health Act](#), which President [Richard M. Nixon](#) signed into law on December 29, 1970.
- OSHA's mission is to "assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance".

NEPAL ENGINEERING COUNCIL

- To make the engineering profession more effective, Nepal Engineering Council was formed under the Nepal Engineering Council Act, 2055 promulgated by His Majesty the King on B.S. 2055/11/27 (11th March, 1999 A.D.).
- As per the Act, NEC has been vested with the statutory authority for the planning, coordinated development and monitoring of engineering profession and education in the country.
- NEC Act 2055 gives an outline on the formation of the Council, its tenure and the roles and responsibilities of the Chairman, Vice Chairman and the Registrar.
- The first Executive Council was formed on Magh 2056 under the chairmanship of Er. Ram Babu Sharma and completed its tenure on Magh 2060.

Objective NEC

- To prepare policies, plans and programs for the smooth functioning of the engineering profession and to execute them.
- To set norms and standards for engineering education in Nepal.
- To monitor and inspect the quality of engineering education provided by engineering colleges and institutions.
- To fix the qualification necessary in order to practice engineering profession and to register their name in the council.
- It also under takes licensing of Engineers in accordance with their qualification.

Constitution of the council

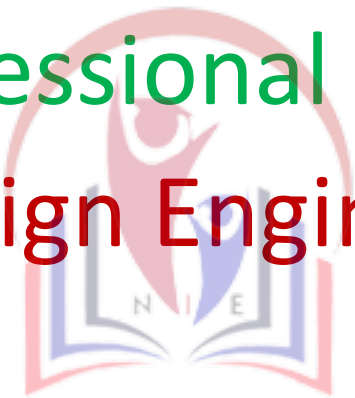
1. Chairman
2. Vice chairman
3. Seven engineers nominated by government of Nepal from amongst the engineer engaged in the engineering profession.
4. President, Nepal engineers association. – Member
5. Five engineers elected by Nepal engineers association –member
6. One campus chief nominated by government amongst the campus chief of the engineering college – Member
7. Representative, IOE, TU- Member
8. Registrar – Member secretary.
9. Three engineers nominated by the council - Member

5.1 Jurisdiction (Scope) of Nepal Engineering Council

- i. Licensing(Registration) of Engineers
- ii. Accreditation of certificates
- iii. Professional code of Conduct

5.2 Registration Category

- i. General Engineer(category-A)
- ii. Professional Engineer(category-B)
- iii. Foreign Engineer(category-C)



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OBJECTIVE QUESTIONS

1. Which of the following is not concerned with the authority of engineers?
 - (a) Express an opinion on engineering matter.
 - (b) Good behaviour with client
 - (c) Conscious with his profession.
 - (d) Divulge the confidential matter.
2. Ethics as a normative science needs code of conduct and guidelines to maintain high level of standard of good behaviour in the society. This is applicable to
 - (a) Lawyer (b) Doctors (c) Engineers (d) all of above

3. The total number of members in Nepal engineering council is

(a) 12 (b) 15 (c) 21 (d) 18

4. According to the labor act, maximum working hour for a labor per week should be

(a) 42hrs (b) 45 hrs (c) 48 hrs (d) 53 hrs

5. Ethics is a science which deals with

(a) Rightness of professional (b) wrongness of professional (c) both (a) and (b) (d) none of the above

6. NEC regulation 2057 is effective from

(a) 2057/3/8 (b) 2057/4/8 (c) 2057/5/8 (d) 2057/ 6/8

7. The registration of foreign engineer in Nepal engineering council fall under

(a) Category A (b) Category B (c) Category C (d) Category D

8. Intellectual property right is

(a) Copy right (b) Birth mark (c) Trademark (d) Patent right

9. When was Nepal Engineers Association was established?

(a) 2028 (b) 2022 (c) 2026 (d) 2024

10. Which is not the characteristics of society

(a) Mutual interactions and social awareness (b) interdependencies
(c) fixed and rigid (d) culture

10. Profession and occupation have similarity in terms of

(a) Specialized knowledge and training

(b) Requirement of membership from professional body

(c) Remuneration of work and practice.

(d) Code of conduct.

11. The tenure for the members of Engineering Council is

(a) 5 years (b) 4 years (c) 3years (d) 6 years

12. The minimum academic qualification required for professional engineer in Nepal is

(a) Diploma in Engineering (b) Bachelor in Engineering
(c) Master in Engineering (d) Bachelor in Engineering from foreign university.

13. Which of the following is not the law of ethics?

(a) Eternal law of ethics
(b) Personal liberty law of ethics
(c) Inclusive law of ethics
(d) Utilitarian law of ethics.