1.8. VARIETY OF MORAL ISSUES

1.8.1. Approaches To Engineering Ethics

There are two different approaches to engineering ethics.

1. **Micro-ethics:** This approach addresses typical, everyday problems that the engineers face in their professional life. In other words, micro-ethics describes ethical issues that may affect an engineer's professional and personal life.
2. **Macro-ethics:** This approach deals with all societal problems that engineers encounter during their career. In other words, macro-ethics discusses ethical issues concerning all societal problems that engineers might encounter.

1.8.2. Where And How Do Moral Problems Arise In Engineering? (Contexts of professional disagreements faced by engineers)

- ✓ Engineers carry out various activities and decision-making exercises involving technical, financial, managerial, environmental, and ethical issues. There are many situations and moral issues that cause professional disagreements among engineers.
- ✓ The variety of moral issues and their relationship with other issues are depicted in Fig. 1.2.

The various moral issues that the engineers may encounter (Fig 1.2.) are as follows:

1. Organization oriented issues

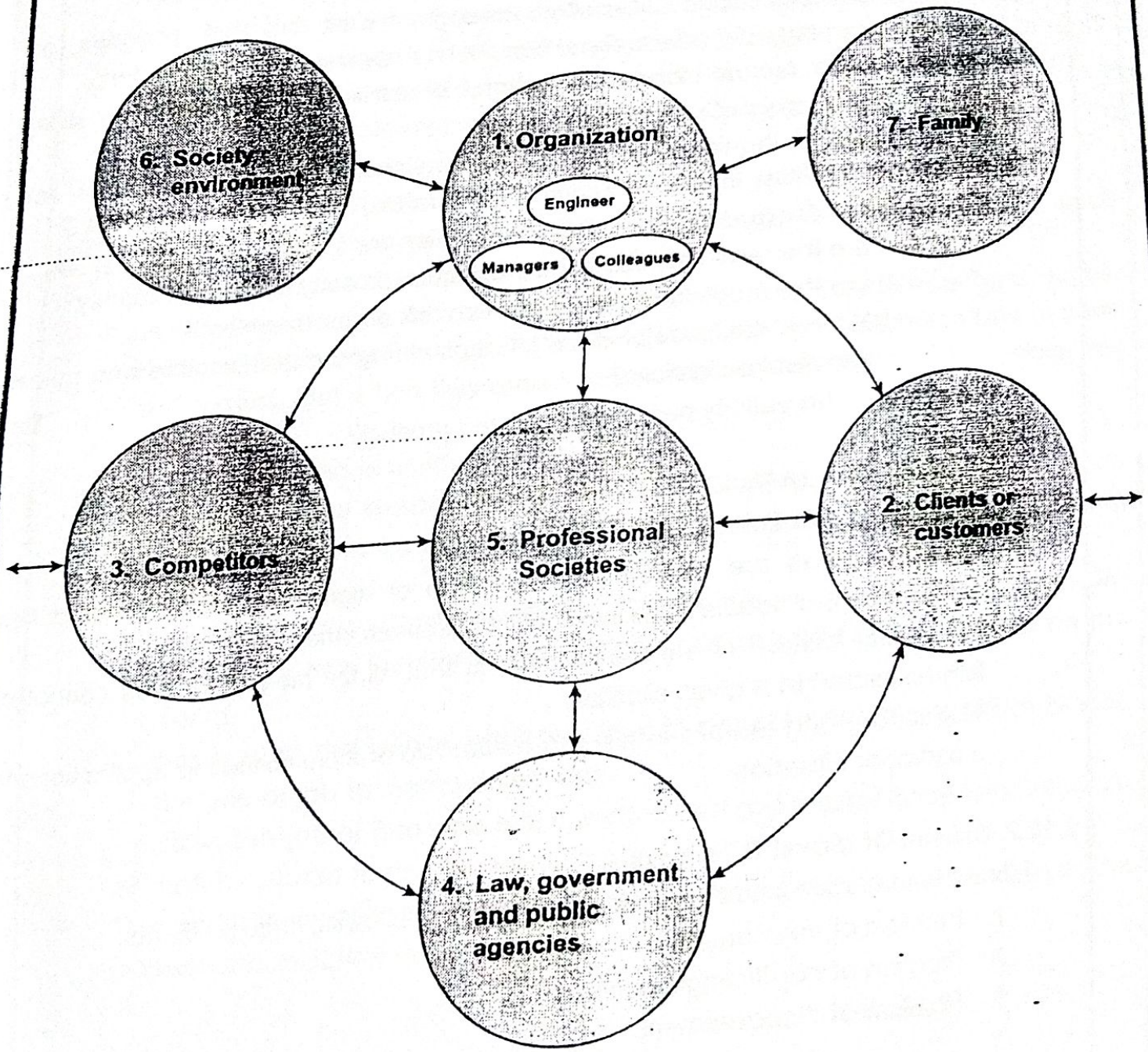
- ✓ Being an employee to a firm, the engineer has to work towards the achievement of the objectives of his/her organization.
- ✓ Engineers have to give higher priority to the benefits of the organization than one's own benefits.
- ✓ Engineers should be able to work collectively with colleagues and other members in order to achieve firm's goals.

2. Clients or customers oriented issues

- ✓ As we know, the purpose of any business is to reach and satisfy the end users. Therefore the customers' requirements should be met.
- ✓ In this regard, engineers have a major role to play in identifying the 'customer voice', and incorporating the voice of the customer into the product design and manufacture.
- ✓ Apart from engineering technicality issues, engineers also should face other moral and ethical issues with their clients/customers.

3. Competitors oriented issues

- ✓ In order to withstand in a market, engineers should produce things better than their competitors by all means.
- ✓ But engineers should not practice cut-throat competition. They should follow certain professional behavior while facing their competitors.
- ✓ Thus engineers should hold paramount the safety, health and welfare of the customers in the performance of their professional duties.



4. Law, government and public agencies oriented issues

- ✓ The engineers should obey and voluntarily comply with all the governmental rules and regulations related to them.
- ✓ They should also respect and honestly practice all other similar laws, policies, and regulations.

5. Professional societies oriented issues

- ✓ The engineers should follow strictly the various codes of ethics by various professional societies such as National Society of Professional Engineers (NSPE), the Institute of Electrical and Electronics Engineers (IEEE), and American Society of Mechanical Engineers (ASME), in order to perform standard professional behavior.
- ✓ Professional codes of ethics reflect basic 'norms' of conduct that exist within a particular professional and provide general guidance relating to a variety of issues.

6. Social and environmental oriented issues

- ✓ Since the works of engineers have a direct and vital impact on the quality of life for all people, the engineers should be dedicated to the protection of the public health, safety and welfare.
- ✓ Also engineers need to be aware their role as agents of experimenters. They should have a united commitment in protecting the environment. They should not involve in any unethical environmental issues such as misusing scarce resources, and fouling environment.

7. Family oriented issues

- ✓ As a human being and the member of a family, the engineers do have the family obligations to take care the needs of their family members. But they should not take any decisions for their own benefits at the cost of public, clients, or employers.

Thus the above discussion explains how the ethical problems often arise in the engineering profession.

1.9. TYPES OF INQUIRY

Engineering ethics combines inquiries into values, meanings, and facts. In order to find answers to many moral dilemmas, it is necessary to understand the types of inquiry*.

In engineering ethics, the three types of inquiry are:

* Inquiry (also enquiry) means a request for help or information.

"Action indeed is the sole medium of expression for ethics." - Jane Addams