



8. Collegiality is the respect shown to your colleague's \_\_\_\_\_.
  - a) Rights
  - b) Emotion
  - c) Attitude
  - d) Expertise
9. Which of the following is the important responsibility of engineer-manager?
  - a) Competitive bidding
  - b) Contingency fees
  - c) Resolving conflicts
  - d) Technical understanding of the product
10. The individuals who direct their group through valuable goals are the \_\_\_\_\_.
  - a) Employers
  - b) Moral leaders
  - c) Professionals
  - d) Entrepreneurs

**PART B (10 x 2 = 20 Marks)**

11. Explain the subtle difference between self-respect and self-esteem.
12. Discuss the meaning of moral autonomy.
13. Traffic rules to be followed while riding a two wheeler. Is it a law or a code? Justify.
14. Justify the features of morally responsible engineers.
15. Rephrase the definition of risk relating to probability and consequence.
16. Living near a High Tension Electrical transmission system violating the Electricity Board Rules. How do you classify this type of risk?
17. Perceive and write when an Identification loyalty is called as obligatory?
18. When does a conflict of interests happen?
19. What do you think the major environmental threat for Instrumentation engineers who work for oil and gas companies? Suggest a solution.
20. What is the fundamental lesson that you learn from Environmental ethics?

**PART C (5 x 14 = 70 Marks)**

21. a) Explain the three levels of moral developments with respect to Kohlberg and Gilligan's views.

**(OR)**

- b) Name the four ethical theories and discuss in detail the features of each theory.
22. a) Analyze the following case study:  
Synopsis:  
Mani, the City Engineer/Director of Public Works for a medium-sized city, is the only licensed professional engineer (and also a civil engineer) in a position of responsibility within the city government. This city has several large food-processing plants that discharge large amounts of waste into the wastewater system during canning

season. Mani is responsible for the wastewater treatment plant and reports to Rahul about its operation.

Mani tells Rahul that the wastewater treatment plant is not capable of handling potential overflow during the rainy season and offers several possible solutions. Rahul replies that they will face the problem when it happens.

Engineer Mani privately notifies other city officials about the wastewater treatment plant problem, but Rahul removes the responsibility for the sanitation system from Mani and gives it to Ravi, a technician who is normally under Mani's supervision. Rahul instructs technician Ravi to report directly to him and confirms this arrangement with a memo, which is copied to engineer Mani. Mani is also placed on probation. He is warned that if he discusses the matter further, he will be terminated.

Mani continues to work for the government as City Engineer/Director of Public Works; he assumes no responsibility for the wastewater treatment plant, but continues to advise technician Ravi without Rahul's knowledge. During the winter, heavy storms occur in the city. It becomes clear to those involved that if the wastewater treatment plant's waste water is not released into the local river, the ponds will overflow and dump all of the waste into the river. Under state law, this condition must be reported to the State Water Pollution Control Authority.

**How would you respond to this situation? How do you assess engineer Mani's actions? What about Rahul's actions? What about technician Ravi? What are engineer Mani's obligations to either Rahul or the Public Works Department? What are Mani's responsibilities for the environmental health of city residents? How might these responsibilities be fulfilled simultaneously? Which takes precedence in case of conflict? What additional information would you like to have, and what difference would it make to your assessment?**

**(OR)**

- b) Analyze the following case study:

Synopsis:

Trench digging is one of the oldest types of construction work documented in history. Prior to World War II, trenches were dug by hand. As workers dug trenches deeper, the sides of the trench had to be shored, or supported, to keep the walls of the trench from collapsing. Following the war, innovations were made in cable backhoes, and trench digging disappeared as an established profession. By the 1950's, hydraulically-actuated backhoes were developed, making it possible to rapidly dig very deep trenches. As a result of backhoe innovations, and because there were no workers inside the trenches during digging, trench walls were no longer shored.

All trenches have what is known as a stand-up time. The stand-up time is the time that elapses from the time the trench is dug until the trench walls start collapsing. Stand-up time is dependent on many factors, including soil type, water content, trench depth, weather conditions, and whether or not the soil has been previously disturbed. Stand-up times can be as short as zero seconds or as long as several months, and are difficult to predict. Before trenches are dug, someone can take soil samples as a means of estimating stand-up time; however, soil conditions can be dramatically disparate only a few feet from where the soil sample was taken.

After a trench is dug, workers go down into the trench, performing whatever work is necessary, such as laying pipe or telephone lines, welding pipe, or installing valves. If

the walls of the trench are not supported, there is the possibility that the walls will collapse and trap the workers in the trench (see view of trench contained on the following page). Historically, there have been between 100 and 300 people killed in the United States every year due to trench collapses. The state of Texas usually leads the nation in this statistic.

**1) Where does the responsibility of the engineer end and the responsibility of the construction site contractor begin?**

**2) Should engineers allow construction workers to endanger their lives by not using trench boxes on-site?**

**3) Should construction management be held responsible for ensuring that trench boxes are used? What is their responsibility?**

**4) If social responsibility comes before legal liability, what would you do in a similar situation, given that the regulations make use of trench boxes optional?**

23. a) Why did they shut the emergency core-cooling system in the nuclear reactor at Chernobyl? Elaborate on the consequences.

**(OR)**

- b) How will you analyse the risks and benefits involved while implementing a new project?

24. a) (i) What is the meaning of Collective bargaining and what are its ethical features in Engineering Profession? (7)

- (ii) Discuss the concept of confidentiality with respect to Professional ethics. (7)

**(OR)**

- b) Define Intellectual property rights and discuss in detail about its features.

25. a) (i) Write notes on ethical hacking and write your suggestions in abolishing unethical hacking. (7)

- (ii) What are the duties of an Engineer in his role as an experimenter? (7)

**(OR)**

- b) (i) Discuss on Engineers involved in weapon development and analyze the problems faced by defense Industry. (7)

- (ii) Elaborate on the problems faced by MNCs in ethical perception. (7)

\*\*\*\*\*