1. Describe various rights of an engineer.

The key rights of engineers as per the documents are:

- The right of professional conscience - This is described as the most fundamental right of an engineer. It gives engineers the right to apply their own professional judgement while discharging their duties, rather than blindly following orders from superiors if they believe those orders are misguided.

- The right to whistle blowing - Engineers have a duty to protect public safety, health and wellbeing. The right to whistle blowing allows engineers to inform higher management or authorities outside the company about unethical, illegal or dangerous activities/practices happening within the organization that could harm the public interest. This right helps them uphold their ethics even if it means going against the company's interests.

- Basic rights like right to privacy, right to participate in legal activities outside of work, right to reasonably object to company policies without fear of retribution, and right to due process. These are fundamental rights that engineers have just like any other professional employees.

2. Define 'Whistle Blowing' and types of whistle blowing giving suitable examples.

Whistle blowing is defined as an act where an employee informs the public or higher authorities about unethical or illegal behavior being conducted by their employer or supervisor within the organization.

There are two main types of whistle blowing:

Internal whistle blowing - This involves reporting the wrongdoing or unethical conduct to higher authorities within the same organization through proper

channels. For example, an engineer reporting safety violations to the company's compliance officers.

External whistle blowing - This involves reporting the misconduct to bodies external to the organization such as government agencies, law enforcement, media, or public interest groups. For example, the case cited in the assignment where an engineer anonymously sent evidence to a member of the assembly about lack of privacy controls in a medical records system, after failing to get it addressed internally.

Two other types mentioned are:

Anonymous whistle blowing - Where the employee reveals the wrongdoing but refuses to be identified.

Acknowledged whistle blowing - Where the employee openly points out the issues they have witnessed and is willing to face any inquiry or consequences for it.

3. Explain the responsibilities of an engineer as Manager.

When engineers move into managerial roles, their main responsibilities are:

- Producing a valuable product/service while maintaining respect for all stakeholders - customers, employees, the general public, and the environment. Safety and human welfare is meant to take precedence over just maximizing profits.

- Promoting an ethical climate and culture in the organization through:
  a) Establishing formal procedures, policies and training around ethics
  b) Leading by personal example and embodying ethical conduct
  c) Making ethics part of routine practices, decision-making and procedures

- Resolving conflicts that routinely arise in areas like schedules, resources, technical issues, costs etc. Some principles for ethical conflict resolution prescribed are:

a) Separating the people from the problem

b) Focusing on interests of all parties rather than stated positions

c) Generating multiple possible options/solutions before deciding

d) Insisting that results be based on fair, objective criteria

4. State the criticism rights and duty theories face.

The main criticisms that rights ethics and duty ethics face are:

- Conflict between rights - The fundamental rights of one individual or group can clash with the rights of another group. These theories don't provide a clear way to determine whose rights should take precedence in such situations.

- Disregard for overall societal good - Rights and duties ethics primarily look at upholding individual rights and duties. They may not always account for or maximize the overall good and well-being of society as a whole, which is the focus of other ethical frameworks like utilitarianism.

5. State the reason for keeping information confidential in an organization.

There are a few key reasons cited for the importance of maintaining confidentiality of certain information within organizations:

- Proprietary knowledge protection - Organizations want to keep proprietary information about product formulas, designs, suppliers, costs, marketing strategies etc. confidential, as leaking it could help competitors gain an advantage.

- Preserving trustworthiness - Clients and third parties give sensitive information to organizations on the understanding and trust that it will be kept confidential. Breaching this confidentiality violates that trust.

- Preventing conflicts of interest - If proprietary info is leaked, it could result in conflicts where employees/ex-employees use that information against the company's interests while working for rivals.

6. State the rights and responsibilities of an engineer.

(This was covered in detail in questions 1 and 3)

7. Explain with examples - Flow charting techniques for solving ethical issues.

Flow charting is a technique to visually depict and analyze the sequence of events and decisions leading up to an ethical situation, as well as the consequences flowing from each decision point.

The advantage of using flow charts is that they provide a clear picture of how the ethical issue unfolded over time through the actions/decisions taken. Seeing it laid out visually can help identify pitfalls or alternative decision paths that could have prevented the issue.

For example, in the Bhopal gas tragedy case, a flow chart could start with the initial decision to set up the plant in India, and follow the various process/safety lapses like:

- Not considering all safety aspects for a hazardous plant
- Allowing water to leak and mix with the toxic MIC gas
- Lack of proper safety mechanisms and preparation
- Until finally the release of the toxic gas vapors causing mass deaths/injuries

Mapping it out this way can pinpoint the crucial decision nodes where unethical decisions/lapses occurred and allowed the tragedy to unfold.

8. Define conflict of interest and types of conflict of interest in detail with suitable examples.

A conflict of interest refers to situations where professionals like engineers have an interest (incentive, relationship, obligation etc.) that could potentially prevent them from acting in the best interests of their employer, client or the general public. It creates a risk of the professional's judgement being compromised by their self-interest.

The document outlines three main types of conflicts of interest:

Actual conflict of interest - This is a clear case where the professional's interests currently clash with their responsibilities. For example, if an engineer is part of an committee evaluating construction bids, and one of the bidders is a company owned by the engineer himself - this would constitute an actual and unacceptable conflict.

Potential conflict of interest - This is a situation that is not an active conflict yet, but could potentially lead to a conflict in the future. For example, an engineer developing a close personal friendship with one of the suppliers for projects he is working on. This friendship could bias his decisions related to that supplier down the line.

Appearance of a conflict of interest - This is where the professional's interests only appear to be creating a conflict, even if there isn't an actual conflict. For example, if an engineer's compensation is a percentage of the total project cost, it could appear that he has an incentive to make project designs more expensive/elaborate than needed to maximize his fees. Even if he does not act on this incentive, the appearance of a potential conflict exists.

9. State the criticism faced by utilitarian theory of ethics.

The two main criticisms of utilitarian ethical theory mentioned are:

1) What is good for society overall may be bad for particular individuals/groups. Utilitarianism focuses solely on maximizing overall societal well-being, even if it means a few individuals have to make sacrifices for that collective good. This contrasts with rights/duty based approaches that emphasize protecting individual rights.

2) Accurately calculating overall utility is very difficult. To make ethical decisions based on maximizing utility, we need to be able to accurately predict all consequences of an action and quantify the overall positive/negative impacts. But in reality, it is nearly impossible to forsee all ramifications, especially long-term ones. This makes it difficult to make decisions that truly maximize overall utility.

10. State the management policies for keeping the confidentiality of an organization.

Some policies and measures suggested to ensure confidentiality within organizations are:

- Having clear procedures and channels defined for reporting violations, as well as stringent penalties for breach of confidentiality agreements.

- Offering incentives to employees to not work on similar projects for competitors for a period after leaving the company. For example, portable pensions or consulting fees conditional on this restriction.

- Conducting regular, surprise audits to check for leaks and verify confidentiality is being maintained.

- Making efforts to instill a sense of professional responsibility and ethics in employees that persists even after they leave the company, rather than just focusing on enforcing obedience to directives.

- Having an effective communication channel for employees to be able to escalate confidentiality concerns to higher management confidentially.

- Leading by example, with senior leadership walking the talk on ethics and not overlooking violations.

11. State your understanding of 'Right ethics and duty ethics of professionalism'.

Rights ethics states that all people have certain fundamental and inalienable rights - like the right to life, liberty, property etc. It makes it a moral duty and obligation for everyone, including professionals like engineers, to respect and uphold these rights of others.

Duty ethics is the philosophy that there are certain moral duties and obligations - like being honest, not causing harm, being fair - that take precedence over other considerations. Professionals should conform to these inviolable duties out of respect for others as autonomous beings.

Both rights ethics and duty ethics belong to the deontological school of ethics which judges the morality of an action based on the nature of the act itself and the intentions behind it, rather than based on the consequences it leads to.

They stand in contrast to consequentialist theories like utilitarianism which focused solely on the outcomes. For duty/rights ethics, there are certain inviolable individual rights/duties which cannot be sacrificed even if doing so would bring about more utility or benefits for society overall.

12. State your understanding of 'Utilitarianism and Virtue ethics of professionalism'.

Utilitarianism is the ethical philosophy that judges the morality of an action based on its ability to maximize overall societal welfare and well-being. The goal is to produce the greatest good and least suffering for the greatest number of people in society.

From a utilitiarian viewpoint, the ethical action by a professional like an engineer would be one that results in the highest net positive impact and benefits across all members of society, even if it means some individuals have to make sacrifices for this greater good.

Virtue ethics, on the other hand, focuses more on the inherent virtuous qualities or moral character of the person making the decisions, rather than just looking at the external consequences. It asks - is the person exhibiting virtues like honesty, integrity, responsibility, caring and other admirable traits through their actions?

From this virtue-based perspective, an engineer's actions would be considered ethical if they showcased virtues and strengths of character expected of an upright professional committed to ethics. The outcomes would be secondary to the intentions and character displayed.

13. Explain with examples - Line drawing techniques for solving ethical issues.

The line drawing technique is a way to analyze and resolve ethical issues where there is a "grey area", by plotting the issue along a line represented by two extreme paradigms - one clearly acceptable and one clearly unacceptable.

The steps are:

1) Define the "positive paradigm" - an example of something that is clearly ethical and acceptable from that ethical perspective

2) Define the "negative paradigm" - an example representing something clearly unethical/unacceptable

3) Place the issue being analyzed somewhere along the line between these two paradigms based on its relative acceptability

For example, when analyzing Intel's approach of initially hiding and downplaying the Pentium chip flaw, we could draw a line with:

Positive paradigm: "Products should perform as advertised"

Negative paradigm: "Knowingly selling defective products that negatively impact customers"

Then plot points like:

- There is a flaw but it doesn't affect any applications

- Flaw is disclosed but no remedy offered

- Warning label about not using for certain apps

- Proactive recall and replacement of flawed chips

Where on this line would Intel's approach of delayed disclosure fall? This relative positioning indicates how ethically acceptable or unacceptable it was.

14. Analyze the case of Bal using ethical theories.

Bal, a computer engineer, had a minor role in developing a medical record system on individuals by name. He learns that few controls have been introduced in the system to limit easy access by unauthorized persons. He informed of the drawback to his supervisor and then the top management but they refused any change because of the huge expense involved. In violation of the rule, he

accessed a copy of his own medical records and forwarded it to the 'member of assembly' as evidence for his claim that the right of the citizens to keep their information confidential was threatened by the system. Check using various ethical theories, whether Bal's actions were ethical.

ANSWER:

From a utilitarian perspective, Bal's whistleblowing actions could potentially be justified if the benefits of exposing the lack of privacy controls in the medical records system outweighed the costs and risks to the organization. By prioritizing public safety over company interests, his actions may have maximized overall social utility.

Through the lens of duty/rights ethics, Bal had a duty to ensure the fundamental right to privacy of individuals was protected, which the flawed system was violating. By escalating the issue through whistleblowing as a last resort after internal channels failed, he was ultimately fulfilling his moral obligation to uphold this key right.

Virtue ethics would examine whether Bal exhibited virtues that society expects of a professional like integrity, responsibility towards public welfare, and courage of moral conviction. His willingness to risk professional repercussions for the greater good could be seen as displaying ethical virtues.

Weighing the different perspectives, while Bal's actions were in violation of his responsibilities to the organization, they can be viewed as ethical and justified from the standpoint of safeguarding public interest and individual rights to privacy when internal efforts were inadequate. He exhausted all other options before escalating externally.