**Course: IT Law & Ethics**

**TD Ethics**

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**Question 1: What is an ethical problem/dilemma for an engineer? May the following actions be justified?**

* Resort to corporations which employ children 🡺 Almost every country in the world prohibits the child labour. It would be unethical to resort to corporations which employ children and violate children’s human rights.
* Making use of non-regular employees/workers🡺unethical if such workers do not enjoy the same legal rights and benefits as regular workers.
* Assign the most dangerous tasks to temporary workers rather than to full time permanent workers🡺 Morale and employee relations problems can arise when you have temps working alongside permanent employees for months, doing the same work and putting in the same hours, but not receiving the same benefits afforded their permanent employee coworkers. Moreover, certain types of jobs are inherently dangerous and require careful safety training.  Studies show that frequency and severity rates of on-the-job injuries are significantly higher with temporary workers.  No matter what a temp’s experience is, care must be taken to see that dangerous tasks are performed safely. Generally, companies must take care not to assign jobs to temporary work in an effort to save their own employees health. That means they should not assign the most dangerous tasks to temporary employees, just because they are temporary.
* Deactivate/disable a safety protection to go faster and further🡺Unethical to compromise the public safety
* Monitoring the employees without warning them🡺unethical as it is an invasion to privacy.
* Receive/accept a personal gift from a supplier🡺 When is a gift inappropriate? When is a gift a bribe? There is a fine line between receiving a gift and a bribe in business. Accepting bribes is a violation of professional ethics and at times a criminal offence, but it is not easy to determine what is and is not a bribe. Sometimes accepting gifts may be a proper part of a business relationship. The difference between what constitutes a gift and what constitutes bribery hinges on several major issues. One issue to consider when assessing whether offering or accepting a gift is inappropriate is whether the business relationship will be altered, or if there is an expectation that it will be influenced in some way. Additionally, the nature and the value of the gift have an important role in considering the appropriateness of the gift. The gift should be modest, and it shouldn’t be such that it would bring your independence and objectivity into question. Accepting cash gifts is rarely acceptable. As it is easier to conceal, it is more likely to be viewed as bribery rather than a fair business practice. Any gift that is not modest, or is of great value, or is disproportionate to the work that has been done should be considered as bribery. It goes without saying that if the aim is to create an expectation of a “favourable” act in return for the gift, then it probably isn’t a gift.
* Fire for economic reasons while the business makes profits🡺 firing staff without being honest to them would be an unethical behavior even if the business wants to proceed to a restructuring.
* Work for a company which manufactures weapons🡺 Engineers who develop weapon systems carry a serious personal responsibility for the use of their designs. Engineers who work for weapon manufacturers need to understand under what rules and regulations their employers manufacture, distribute and sell these weapons; who is the consumer and user; what restrictions on use of the weapon are in place; and how these restrictions are enforced and verified. It is not easy to obtain this information, and circumstances of distribution and use may change in time. However, if it is clear, for example, that if the manufactured weapon is on the list of internationally proscribed weapons (e.g., chemical weapons or napalm incendiary weapons) then the answer is clear: engineers should not agree to participate in making such weapons. Second, not all weapon manufacturing is unethical. The intended use and the identity of the user of the weapon are critical. For example, weapons that are used to defend civilian populations against air strikes are clearly ethical to design and deploy. It is recommended that engineers who consider participation in weapon design give the matter thorough analysis, and investigate the circumstances, customers, intended use, the future of the project, and expected "after effects".
* Refuse to take part in one of the company’s projects due to personal convictions🡺 We are all influenced by the cultures in which we grew up and the societies in which we live. Those cultures shape our expectations, values, beliefs, and goals. Engineers, too, are shaped by their cultures and societies, which in turn, influence their work. For example, an engineer may refuse to participate in a certain company’s project because it conflicts with his or her ethical, moral, personal, or religious convictions or beliefs-in short, their conscience. The right to freedom of conscience is represented in all international conventions concerning human rights. So, the engineer would risk to lose his/her job but it would be an ethical choice.
* Disclose company’s confidential information concerning a security breach🡺 whistleblowing is an acceptable conduct if public health, public security, and public welfare are seriously threatened.

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**Question 2: A registered engineer is being interviewed for television on a matter relating to his expertise that affects the public safety. The interviewer asks a question about the chances for a cure for AIDS. The engineer should**

(A) express his opinion honestly and completely

(B) decline to comment

(C) recount what he read in a magazine article on the subject

(D) suggest everyone get an AIDS test

**Answer**

B is correct. The engineer’s credibility with the public should not be abused. The public could attribute much credibility to the engineer’s opinion because of his perceived expertise. Protecting his credibility on matters of public safety is all the engineer should care about. Unless his opinion is based on scientific evidence, he should decline to comment.

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**Question 3. Under what circumstances can a registered engineer sign and seal plans or documents he/she did not prepare?**

(A) Registered engineers can coordinate projects that include segments that they are not competent in if a qualified registered engineer signs and seals plans or documents for those segments of the project.

(B) Under no circumstances.

(C) If the plans or documents were prepared by someone under the registered engineer’s direct supervision and the registered engineer is an expert in the subject matter.

(D) When practicing in a state different than the one in which the engineer is registered.

**Answer**

Answer C is correct. Answer A is a true statement, but it has nothing to do with the problem statement. In the USA, plans or documents prepared under the direct supervision of a registered engineer where the engineer is an expert, can be signed and sealed by the engineer assuming he has reviewed the plans or documents.

Rule: Do not sign and seal plans or documents on something the engineer is not competent in, or that were not prepared under his/her direct supervision.

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**Question 4: A registered engineer has applied for a promotion at a firm she has been working at for several years. During an interview for the new position, she is asked to contrast her qualifications with other registered engineers at the firm who have applied for the same position. She should**

(A) withdraw her application for the position.

(B) give a full accounting of all the ways her ability and experience are

superior to those of the other applicants.

(C) demand to speak to the interviewer’s supervisor.

(D) decline to compare her qualifications but offer to describe them.

**Answer**

D is correct. An engineer in this situation can discuss and promote his own qualifications for the position. However, comparing his qualifications with other registrants applying for the position and speaking negatively about them would be an ethical behavior? The applicants can discuss their qualifications, and the employer can make the comparisons and finally the choice.

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| **Question 5**  Proteus, a senior licensed professional engineer, established a small firm, EngCo, to provide professional engineering services to the public. The firm became busy very quickly and within a few months, hired A. Green, a bright, recent university graduate with an engineering degree, to assist with the work. Proteus strongly believed in mentoring and hoped that in several years, after obtaining the necessary experience requirements and becoming a P.Eng., Green would assume increasing managerial responsibility and possibly an ownership interest in the firm.  About a year after Green joined the firm, EngCo was asked by one of its clients to provide a formal report that included an engineering opinion. Green performed the work on that matter and prepared a draft of the report. Before having a chance to review Green’s work, Proteus received an urgent request from another client that required Proteus to leave on a lengthy business trip. On the way out of the office, Proteus stopped at Green 's desk and said, “Sorry, but I'll be out of the country and tied up completely for the next three weeks, so I won't be able to review that report. I know that it’s due tomorrow, so go ahead and sign it under your own name and send it to the client so we meet the deadline.” Proteus was confident that the report would be fine since Green had always produced outstanding work in the past. Green proceeded to complete the report, signed it “A. Green, Eng., EngCo” and sent it to the client.  **In your answer, please assume that Green’s report would have no impact on public safety or welfare.**   1. Discuss the conduct of both Proteus and Green. What, if anything, should they be concerned about?   **Answer**  Proteus who is a licensed professional engineer in the US should have reviewed and signed the report. Green is a graduate engineer who works under the direct review and supervision of Proteus. It’s the professional engineer who takes full responsibility for the graduate engineer’s work. Green cannot take public or private responsibility for his own work, or be in charge of the engineering work he does, until he has been licensed as a professional engineer.  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Question 6:** **While supervising a construction project in a developing country, an Engineer discovers that his client’s project manager is treating laborers in an unsafe and inhuman manner (but for that country, legal). When he protests, the Engineer is told by the company executives that the company has no choice if it wishes to remain competitive in the regions, and he should accept this as the way things are. What would Ethics require the Engineer to do?**  A. Take no action – the company is acting in a perfectly legal manner.  B. Withdraw from the project, returning any fees he may have already received.  C. Report the company to the proper authorities for its human rights abuses.  D. Assist the laborers in organizing a strike to obtain better working conditions.  **Answer**  B is the correct answer. The engineer should at least withdraw from the project as a form of protest. The company hasn’t broken any laws, so there is no one to report them to at national level, but it is using unethical business practices. Treating laborers in an unsafe and inhuman manner would be a violation of human rights. Therefore, the engineer can eventually report such business practices to international human rights organizations. He could go so far as to assist the workers in a strike but this actually might be illegal in the country and such activism would be a personal choice, not something he is obligated to do under a code of ethics.  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Question 7:** James is an engineer working for the company AERO that produces aero-engines. The company is developing a new type of aero-engine called the FANX. James is responsible for the testing of the FANX. He is in the middle of conducting a range of crucial tests for the reliability of the new aero-engine. Yesterday, Bill – who is James’ boss - has asked James to finish his test reports within a week because an important potential customer will visit AERO next week and wants to have a look at the first test reports. James first reaction is to refuse Bill’s request: he is not able to finish the test report within a week; he first needs to do more tests. James considers these additional tests crucial for gaining good insight in the reliability of the FANX. Bill tells James to abandon the planned other tests and to start writing his report immediately. Later, there will be more time to do the other tests. Bill also tells James that if James refuses he will ask Eric to write the report. James says that he really needs more time. Moreover, he objects, Eric is not knowledgeable of the tests and will not be able to write a sound report. After the meeting, James contacts Eric who says that he agrees  with Bill and that he will write the report if Bill asks him to do so.   1. **Suppose that James the next day decides to follow Bill’s order and to finish the report immediately abandoning the other tests. Can this choice of James be justified? Explain why or why not.** 2. **Are there other options than either writing report or letting Eric do it?**   **Answer**  **Utilitarian approach:** To analyze an issue using the utilitarian approach, we first identify the various courses of action available to us. Second, we ask who will be affected by each action and what benefits or harms will be derived from each. And third, we choose the action that will produce the greatest benefits and the least harm.  **ACCEPT**🡺 Better consequences because more sound report than in case Eric accepts assignment. Therefore, all parties are satisfied: customer (has a report and the report is more sound than as Eric does it), Bill (according to his request), Eric (does not have to write a report for which he is not qualified), James (better report, better for his position in company), public (less chance of accident due to incomplete or unsound report)  -James can indicate in report that it is preliminary and that more tests must be done.  **BUT Are consequences indeed better?**  **Are there other options than either writing report or letting Eric to do it? i.e. whistleblowing**  **REFUSE🡺** If every test engineer would give in in situations like this, test reports won’t be trusted anymore and testing would become superfluous. What virtues are relevant for an engineer doing test?  -Precision, carefulness, expertise/professionalism, objectivity, integrity, courage, firmness🡺what action is supported by these virtues? 🡺not giving in, also not accepting Eric takes over assignment.  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Question 8: “Suppressed Data”**  A recent graduate of Engineering Tech, you have been employed in the R & D Chemical Engineering Division of Larom, Inc. for the past several months. You were hired because of the promising research you did with catalysts as a student at Engineering Tech. A meeting of your division is called by your supervisor, Alex Smith. He announces that your unit must make a recommendation within the next two days on what catalyst should be used by Larom in processing a major product. The overwhelming consensus of the engineers in your unit, based on many years of experience, is that catalyst A is best for the job. But the research you have been conducting at Larom provides preliminary evidence that catalyst B might be more reliable, more efficient, and considerably less costly. So, you ask if the recommendation can be delayed another month to see if firmer evidence can be found. Alex replies, "We don't have a month. We have two days." He then asks you to write up the report, leaving out the preliminary data you have gathered about catalyst B. He says, "It might be nice to do some more research on B, but we've already taken too much time on this project. This is one of those times we have to be decisive--and we have to look decisive and quit beating around the bush. Management is really getting impatient with us on this one. Besides, we've had a lot of experience in this area."  You like working for Larom, and you feel fortunate to have landed such a good job right out of Engineering Tech. You have no desire to challenge your colleagues. Besides you don't necessarily disagree with them about which catalyst is best. Still, you wish you had been given more time to work on catalyst B, and you feel uncomfortable about leaving the preliminary data out of the report. **What should you do?**  **1. Write up and sign the report as instructed.**  **2. Write up the report as instructed, but refuse to sign it.**  **3. Refuse to write up the report, threatening to go around Alex to the next level of management if a fully accurate report is not made.**  **4. Other.**  **Answer**  **First choice,** for not losing your job, since you would only be following orders. **“Other”** could be an answer. A sensible alternative seems to be to suggest that catalyst A be recommended, but the data about B be included, if the data about B has not engendered serious doubts among the experienced engineers in the unit.  **For those students who favor suppressing the data, there is a second scenario:**  -You write the report as instructed and Larom proceeds with catalyst A. Two months later, the Vice-President for Research at Larom, learns that a major competitor has just begun using catalyst B in a similar process. Its engineers discovered that B is ideal for this process. It is more liable, more efficient, and much less expensive. Vice-President is very upset that Alex Smith’s unit missed the boat and he personally meets with the entire unit to make his irritation known by complaining that Larom has invested a lot of money in this process-only to find out that it’s now falling behind a major competitor.  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Question 9**  **Part 1:** R&M Machinery had for years provided XYZ Inc. with sophisticated equipment and reliable repair service. XYZ Inc. returned a failed piece of equipment. A meeting was held which included Archie Hunter, a representative from XYZ Inc.; Norm Nash, R&M's returned goods area representative, and Walt Winters, an R&M engineer intimately acquainted with the kind of equipment XYZ Inc. had returned. Norm Nash represented R&M's "official position": the piece of equipment is all right. However, during the meeting it becomes apparent to Walt Winters that the problem must be R&M's. He suspects that the equipment was not properly tested out by R&M, and that it failed because of an internal problem.  **Discussion Question 1:**  Should Walt say anything about this in the presence of the customer, or should he wait until after the meeting to discuss this with Norm Nash?  **Part 2:** Walt keeps silent during the meeting. After the meeting he talks with Norm about hisdiagnosis. He suggests they tell XYZ Inc. that the problem is R&M's fault, and that R&M will replace the defective equipment. Norm replies, "I don't think it's wise toacknowledge that it's our fault. There's no need to hang out our wash and lessen XYZInc.'s confidence in the quality of our work. A 'good will' gesture to replace theequipment should suffice."  R&M management decides to tell XYZ Inc. that they will adjust to the customer's needs "because you have been such a good customer all these years." Although R&M replaces the equipment at its own expense, it does not tell XYZ Inc. the real nature of the problem.  **Discussion Question 2:**  Discuss R&M’s resolution of the problem. Should R&M's way of handling the problem be of any concern to Walt Winters at this point, or is it basically a "management problem"?  **Part 3**  Many engineers eventually move into management positions. If Walt Winters moves into management, what lessons, if any, might he take with him from the above situation?  **Answer**  The fundamental moral concept of honesty is at stake in this case study. Norm Nash, representing the position of management, has made the decision to deny the possibility of a defective product. This decision has been made based on public image and ignores the technical opinion given by Walt Winters, one of the firm’s engineers, Winter’s silence is probably appropriate in the first meeting with the client. His position is one of technical support, not public relations. Also, his suspicions are not yet confirmed, and a preliminary contradiction of Nash’s statement is unwarranted. Winters is correct in raising his objections directly with Nash following the meeting with the client. Norm Nash’s reaction is unfortunate. Winters should be distressed by this reaction. His first move should be to disassemble the equipment to confirm his diagnosis, if possible. If the evidence supports his hypothesis, he should than press Nash vigorously to deal honestly with the client. While this one experience with one executive may not be indicative of the attitudes of all management executives in the corporation Winter should observe corporate management decisions carefully for other moral deficiencies. The expression that this is merely a management problem of little concern to technical staff can lead to serious consequences. If management decisions routinely overrule factual technical information, placing public relations over honesty this may lead to ethical disaster.  One question comes to mind: what is the cost of honesty here? The relationship between R+M and XYZ Inc. is firmly established based on year of reliable service. An honest admission of equipment failure will not damage such a relationship. Confidence is built, not destroyed by honesty and integrity. The client is left with unanswered questions: Is this an equipment deficiency? Is it an installation problem? Has the breakdown occurred due to operator error or improper maintenance? These questions might lead to suspicions.  **Part 3:** It is precisely the lackof economic cost that makes this case so disturbing. The lessons for Winters are clear: If honesty can be compromised in such a trivial instance, why should one insist on integrity when costs are high? Surely, it will be easier to dismiss moral/ethical requirements. The image of infallibility cultivated by managers like Nash, and their unwillingness to admit fault leads to unrealistic expectations by clients. When failures do occur, society is unprepared for the consequences. The concept is not at all well understood by the public. The state of the art cannot advance without failure. Technical professionals have an ethical responsibility to communicate honestly about failures, this contributing to the safety and reliability of products and the advancement of engineering design practice.  What if the anticipated costs were higher? What if the XYZ Inc were a new prestigious client, with no established business relationship? An honest admission of fallibility might destroy the relationship in its infancy. What if the equipment failure had resulted in great economic losses to XYZ Inc., as products and other equipment may have been damaged by the failure? What if serious injuries, or even deaths, were caused by this failure? Should the actions of Nash and Winters be any different? There are legal implications which make the situation more complex.  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Question 10:** Kim is an engineer who works for a large defense contractor. Part of Kim's job requires reviewing the work of subcontractors the company employs. Kim discovers that certain subcontractors have made submissions with excessive costs, time delays, or substandard work. He advises management to reject these jobs and require the subcontractors to correct the problems.  After an extended period of disagreement with Kim over the issues, management places a warning in Kim's personnel file and places Kim on three months' probation, with a warning about possible future termination. Kim believes that his company has an obligation 1) to ensure that subcontractors produce acceptable work, and 2) cut unnecessary costs to the government. Finally, Kim requests an opinion on the matter from the proper authority.  **Does an Engineer (Kim) have an ethical obligation, or an ethical right, to continue his efforts to secure change in the policy of his employer under these circumstances, or to report his concerns to proper authority?**  **Answer**  Here the issue does not allege a danger to public health or safety, but is premised upon a claim of unsatisfactory plans and the unjustified expenditure of public funds. If an engineer feels strongly that an employer’s course of conduct is improper when related to public concerns, and if the engineer feels compelled to blow the whistle to expose the facts as he sees them he may well have to pay the price of loss of employment. It is worth noting that the ethical duty or right of the engineer becomes a matter of personal conscience. The Code would only require that the engineer withdraw from a project and report to proper authorities when the circumstances involve a serious risk for the public health, safety, and welfare. Engineer does not have an ethical obligation to continue his effort to secure a change in the policy of his employer, or to report his concerns to proper authority but has an ethical right to do so as a matter of personal conscience.  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Question 11:** Suppose engineer James inspects a building for a client before the client puts the building up for sale. James discovers fundamental structural defects that could pose a threat to public safety. James informs the client of these defects in the building and recommends its evacuation and repair before it is put up for sale. The client replies, « James, I am not going to evacuate the building, and I am certainly not going to spend a lot of money on the building before I put it up for sale. Furthermore, if you reveal the information to the authorities or to any potential buyer, I am going to take whatever legal action I can against you. Not only that, but I have a lot of friends. If I pass the word around, you will lose a lot of business. The information is mine. I paid for it, and you have no right to reveal it to anyone else without my permission».  What would you advise James to do?  **Answer**  Engineers’ obligations to employers or clients are secondary to their obligation to society. Where there is a conflict, the interests of society (especially regarding safety) take precedence. In this situation the public safety is threatened and James should reveal his concern externally and report the facts to the proper authorities. |

**ATTENTION: Some of the above-mentioned answers are indicative. Other answers would be acceptable as long as they have a reasoning and they are sufficiently justified.**