



**American International University- Bangladesh (AIUB)**  
**Faculty of Engineering (EEE)**

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| Course Name:  | Engineering Ethics and Environmental Protection  | Course Code:     | EEE 3107   |
| Semester:     | Summer 2021-22   | Submission date: |            |
| Item:         | CO1: Design solution for complex ethical dilemma in accordance with professional engineering practices (P.f.2.C6). |                  |            |
| Student Name: | Hasan, Mahmud  | Student ID:      | 17-33881-1 |
| Department:   | CSE Department   | Section:         | D          |

**Marking Rubrics (to be filled by Faculty)**

| Category  | Proficient<br>[6]  | Good<br>[5]   | Average<br>[4-3]  | Poor<br>[2-1]  | Secured Marks |
|---|--|---|---|--|---------------|
| <b>Explanation of Ethical Dilemma</b>   | Dilemma /problem to be considered critically is stated clearly and described comprehensively, delivering relevant information necessary for full understanding.  | Dilemma /problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.   | Dilemma /problem to be considered critically is stated, but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, | Dilemma /problem to be considered critically is stated without clarification or description.                   |               |
| <b>Accepted practice areas in the engineering discipline (K7)</b>   | Identifies and relates all the solutions with the accepted practice in the engineering discipline.   | Identifies and relates some of the solutions with the accepted practice in the engineering discipline.  | Identifies and but does not relates the solutions with the accepted practice in the engineering discipline.   | Fails to identify and does not relates the solutions with the accepted practice in the engineering discipline. |               |
| <b>Depth of Knowledge (P1)</b>  | Specific position (perspective, hypothesis) is imaginative, considering the complexities of an issue. Limits of position (perspective, hypothesis) are acknowledged. Others' points of view and assumptions are synthesized within position (perspective, hypothesis). | Specific position (perspective, thesis/hypothesis) considers the complexities of an issue. Others' points of view and assumptions are acknowledged within position (perspective, hypothesis). | Specific position (perspective, hypothesis) acknowledges different sides of an issue.   | Specific position (perspective, hypothesis) is stated, but is simplistic and obvious.                          |               |
| <b>Critical analysis with related outcomes including all factors (implications and consequences) (P7)</b> | Extends a detail critical analysis with related outcomes including all factors (implications and consequences)   | Extends a detail critical analysis with some related outcomes including all factors (implications and consequences)   | a partial critical analysis with minimum related outcomes including all factors (implications and consequences)                                       | a partial critical analysis with no related outcomes including all factors (implications and consequences)     |               |
| <b>Valid Conclusions with innovative thinking (P3)</b>  | Valid conclusions and innovative thinking that reflect student's informed evaluation and ability to provide logical and unique solution  | Valid conclusions and innovative thinking that reflect student's informed evaluation but solution is not unique.  | Partially logical conclusions with some innovative thinking.  | Conclusion is inconsistently tied to some of the information discussed; related outcome is not unique.         |               |

**For complete Similarity with other (Negative Marking will be imposed)**

|           |  |                          |  |
|-----------|--|--------------------------|--|
| Comments: |  | Total Marks (Out of 30): |  |
|-----------|--|--------------------------|--|



Charlie Long is an electrical engineer working for a major automobile company in the year 2001. He works in the automatic sensors department, and his job is to design and test electronic sensors for use in different parts of cars. The latest version of the Lightning-Z100 was recently launched into the national market, equipped with an electronic sensor crucial to an innovative safety feature of the vehicle. This sensor was designed and tested by Charlie's department. The Lightning-Z100's major competitor equipped its comparable model (the Bolt-Z100) with a somewhat similar sensor two years before, and it apparently was effective in reducing the number of fatalities in head-on collisions. Convinced that they could quickly come up with a design for an electronic sensor to match the Bolt-Z100's, Charlie's department committed to preparing one in time for the 2001 Lightning-Z100 model. Unfortunately, the design challenge proved to be more formidable than they expected, and they fell behind schedule. At the same time, they were under pressure to have something ready for the 2001 model. This, they were told by management and marketing strategists, could be the key to competing successfully with the Bolt-Z100.

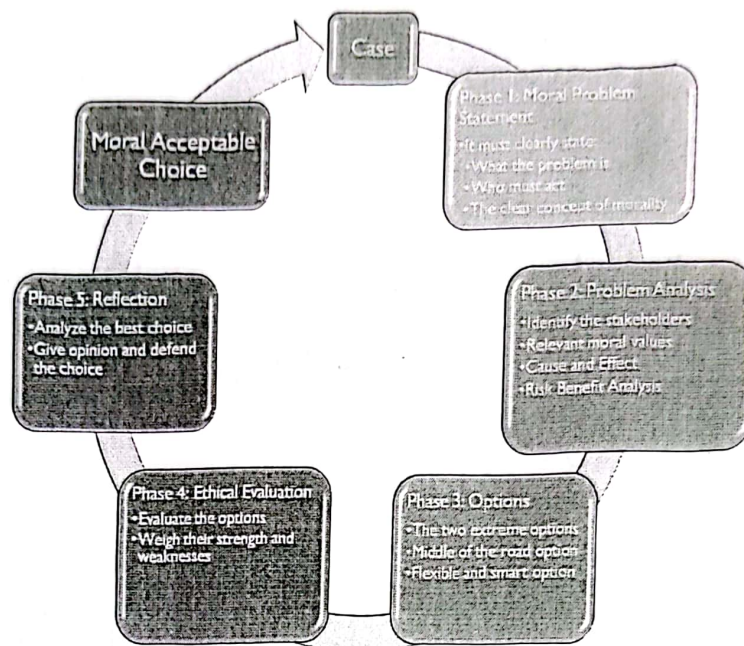
So, time was short, and Charlie's department could delay its recommendation no longer. Although the prototype was not subjected to as rigorous testing as usual, Charlie's department recommended a go-ahead. Charlie was uncomfortable with this decision. He objected that more testing was needed on sensors that served an important safety function. But he was overruled, and he pressed the issue no further. Several months after the Lightning-Z100 was on the road, a disturbing set of data emerged. A very high percentage of head-on collisions resulted in the death of passengers in the Lightning-Z100, much higher than similar collisions involving the Bolt-Z100. As Charlie thought about this, he realized that the problem could lie in the new electronic sensor. The National Highway Traffic Safety Administration (NHTSA) decided to do a detailed study of the Lightning-Z100. Although it could not determine the precise nature of the problem, NHTSA found that, for some reason, the new electronic sensor was not functioning according to the design. All the new Lightning-Z100's would have to be recalled as soon as possible in order to avoid any more deaths from malfunctioning sensors. Charlie reexamined the design. Suddenly he realized that there was a very specific design flaw. He was not sure why this realization had come to him--it would not be obvious, even to experienced electrical engineers. But there it was, staring him in the face. Further testing might have revealed this earlier, but there had not been time for that. Meanwhile, many expensive lawsuits were being pressed against Charlie's company. Called in to testify in court, Charlie had a tough problem.

Charlie is given three options to handle the scenario: Should he reveal everything (his belief that the testing was inadequate and his recent discovery) and cost the company a great deal of money? Or should he testify that he had been convinced that the testing was adequate? Should he keep it to himself that he now knew that there was something wrong with the design? Your task is to answer the following questions:

1. Describe clearly the Moral clarity and Necessary critical information needed for analyzing the case in two paragraphs.
2. Select a feasible ethical solution from the given choices with proper justification.



Using the below five-step analysis technique of resolving Ethical / Moral Dilemma in this case from the concept of IEEE Code of Ethics (i.e. that how they should act Ethically and handle the situation with some proposed solutions and finally which solution they adopt). You have to explain clearly the five steps with the necessary description. Write about the Moral Clarity and Justification of your final choice of option to solve the case from the Perspective of the IEEE Code of Ethics.



In this case study, The first phase is Moral problem. Here they want to make one in time for an electronic lightning lightning, but they can't make it properly, and after taking with management they ignore public's safety and key to completing successfully with Boltz 100. The moral problem statement is here that they were not think about public safety so that they ~~can~~ ignore the testing phase.

Here, in the problem analysis phase, we find that the main thing the management ignore the testing phase of the Boltz 100. This is very harmful for their passenger. Because of this passenger safety the problem this is the main problem analysis. Here they need new standard, Need more tests to meet new standard, more test results, more time.

In the options, the ideal choice is complete the test to meet the new standard. Here in the case study we find they don't test their product. On the other hand, Non ideal choice release the software under old standard, Middle the road prepare short tests to save partial money and time.

In the Ethical Evaluation of this case study, firstly if we think the ideal choice we get more time & money, job risk, competitive disadvantage and risk of utility cost, Risk for public safety, save the partial money and time, partially meet the standard. The smart option turns less time & money, No job risk, confident for public safety.

In the Reflection of this case study the Best option of my opinion is mainly we must need to check properly and test our product of customers safety. In the smart option we see less time & money, so that no job risk, competitive advantage and save utility cost, confident for public safety. Here <sup>main</sup> reflection is to must check and test properly the machine before it running the road.

In the Moral Acceptable phase, ~~to~~ here in the case study is to must ~~do the~~ check ~~the~~ and test properly the machine. and contact the management. because of safety of the passengers. This is the ~~ethics~~, moral Ethics, we must be follow this type of Ethics,