A) ENGINEERING DESIGN PROCESS

Evaluated part	Judging Criteria	Evaluating details	Point
Problem Statement	**Selected problem deals with an interesting or challenging community issue**	*Does not state a problem*	*0*
		Statement, but is not a community-based problem	3
		States a community-based problem but not clearly	5
		States an interesting or challenging community-based problem	10
		States a unique community-based problem	15
	Clear question to be answered	*Does not state a question to be answered*	*0*
		Question is stated but not related to problem	3
		Question is stated, related to problem but not clear	7
		Question is stated, related to problem and clear	10
	Literature search is extensive and scholarly sources are reputable and varied	*EACH generic resource (i.e. name of website but not a specific page, etc.)*	10
		EACH specific resource	20
	Describes relevant information that relates to the selected problem	*Does not mention the previous solution*	*0*
		mention the previous solution without citing the sources	15
		mention the previous solution and all sources cited throughout	25

Evaluated part	Judging Criteria		Points
DESIGN DEVELOPMENT	Clearly explains the constraints and the criteria for their solution.	Explains what is required for their solution and criteria are measurable. (Related to the limits and criteria of the solution).	5
		Explains what is required for their solution and constraints are measurable and connected to the stated problem. (Related to the limits and criteria of the solution).	10
		Explains what is required for their solution and constraints are measurable, connected to the stated problem, and connected to information learned in team research some constraints may be missing. (Related to the limits and criteria of the solution)	15
		Explains what is required for their solution and criteria are measurable, connected to the stated problem and connected to information learned in team research, and explanation is very clear and complete. (Related to the limits and criteria of the solution).	20
	Clearly explains the connection between the design components and the idea	Not all parts of the design components are directly related to the idea being developed and those that are, are less relevant.	5
		Most of the design components are somehow linked to the problem being developed.	10
		All components are directly linked to the idea being developed.	15
		The Design reflects high exemplary & high relevance to the idea being developed.	20
	Clarify the constants needed for the design	Does not identify any constants	0
		Identifies only incorrect constants	5
		Identifies some correct and some incorrect constants	10
		Identifies correct constants but leaves some out	15
		Appears to correctly identify all constants	20

	Clearly explains the solution proposed to the problem	States a proposed solution to the problem that addresses stated criteria.	5
		States a proposed solution to the problem that addresses stated criteria and addresses stated constraints	10
		States a proposed solution to the problem that addresses stated criteria and addresses stated constraints and is very clear and fully explained.	15
		States a proposed solution to the problem that addresses stated criteria, addresses stated constraints, is very clear and fully explained and a labeled drawing is included	20
	Develops a logical hypothesis based on an analysis of all research	Does not provide a hypothesis	0
		An independent variable is stated	5
		An independent and dependent variable are stated	10
		The independent and dependent variables are stated and related	15
		Both variables are stated and related and evidence of research is present	20
		Both variables are stated and related, research is evident, and hypothesis is written in a proper format	25
		Both variables are stated and related, research is evident, hypothesis is properly formatted, and can be tested	30
	Clear selection of method for testing solution is described	Tried to test the solution but the test wasn't the best for the design.	5
		Chooses a method to test proposed solution.	10
		Chooses a method to test proposed solution and explains why chosen method was selected.	15
		Chooses a method to test proposed solution and explains why chosen method was selected and explanation is clear and makes sense	20

Evaluated part	Judging Criteria	Evaluated Details	Point
BUILDING PROTOTYPE	**Explanation of how prototype or model was constructed OR what information was used for an educated guess about how the prototype would work is clear and addresses the problem stated.**	Explains how prototype or model was constructed OR explains what information was used to make a prediction	5
		Explains how prototype or model was constructed and relates to proposed solution with some reasonable safety requirements OR explains what information was used to make a prediction and relates to proposed solution	10
		Explains how prototype or model was constructed and relates to proposed solution and to the stated problem with most of the reasonable safety requirements OR explains what information was used to make a prediction and relates to proposed solution and to the stated problem	15
		Explains how prototype or model was constructed and relates to proposed solution and to the stated problem and is very clear and detailed with well-planned safety requirements Or explains what information was used to make a prediction and relates to proposed solution and to the stated problem and is very clear and detailed	20

Evaluated part	Judging Criteria	Evaluated Details	Point
TESTING PROTOTYPE	**Explanation of procedures is clear and complete**	Lists all steps necessary to test prototype OR all steps necessary for a proposed test (if not able to build prototype)	5
		Lists all steps necessary to test prototype OR all steps necessary for a proposed test (if not able to build prototype) and includes all necessary safety precautions	10
		Lists all steps necessary to test prototype OR all steps necessary for a proposed test (if not able to build prototype), includes all necessary safety precautions, and clearly relates to proposed solution	15
		Lists all steps necessary to test prototype OR all steps necessary for a proposed test (if not able to build prototype), includes all necessary safety precautions, clearly relates to proposed solution, and is very clear and correctly uses engineering terminology	20
	Describe all problems encountered during testing or predicts problems for proposed testing	15 Points: Explains AT LEAST 1 problem encountered during testing OR proposed testing (if not able to build prototype)	**5**
		Explains AT LEAST 1 problem encountered during testing OR proposed testing (if not able to build prototype) and problem(s) encountered is/are explained in detail	**10**
		Explains AT LEAST 1 problem encountered during testing OR proposed testing (if not able to build prototype), problem(s) encountered is/are explained in detail, and is very clear and free of spelling and grammar mistakes	**15**
	Description of how the team changed (or would change) their prototype	5 Points: Describes changes made to prototype or model (or proposed prototype if not able to build one)	**5**
		Describes changes made to prototype or model (or proposed prototype if not able to build one) and changes are related to problems encountered during testing (or predicted problems)	**10**

		Describes changes made to prototype or model (or proposed prototype if not able to build one), changes are related to problems encountered during testing (or predicted problems), and appear necessary to achieve proposed solution	**15**
		Describes changes made to prototype or model (or proposed prototype if not able to build one), changes are related to problems encountered during testing (or predicted problems), appear necessary to achieve proposed solution, and includes an explanation of why the changes will improve their solution.	**20**
	A sufficient amount of data is collected and well-presented	No data presented	0
		Data not clearly presented	5
		Data presented but not related to proposed solution	10
		Data presented clearly and related to proposed solution but incomplete	15
		Data presented clearly, related to proposed solution and complete	20
	Lists sources of error and explains how these could have affected the results	0 Points: Does not list any errors	**0**
		Incomplete list of sources of error	**5**
		Lists sources of error only, no explanation	**10**
		Lists sources of error, explains how affected the results, but vague	**15**
		Lists sources of error, explains how affected the results, lacks some detail	**20**
		Lists sources of error, explanation very thorough and free from spelling or grammar errors	**25**

Evaluated part	Judging Criteria	Evaluated Details	Point
DRAWING CONCLUSIONS	Provides thorough explanation of conclusions drawn based on their testing	No conclusion provided	0
		Conclusion provided	5
		Conclusion is related to testing conducted	10
		Conclusion is related to the testing and includes data collected	15
		Conclusion is related to the testing, includes data collected, and refers to proposed solution	20
		Conclusion is related to the testing, includes data collected, refers to proposed solution, and refers to original problem stated	25
		Conclusion is related to the testing, includes data collected, refers to proposed solution, refers to original problem stated, and is well written and clear and free from spelling and grammar errors	30

Evaluated part	Judging Criteria	Evaluating details	Point
Benefit to the Community	Indicates how this project can help the community	*Does not answer the question*	*0*
		How this project helps the community is vague	*10*
		States the problem, but not how the investigation could help	*15*
		Includes the problem and the benefits of the investigation but lacks some detail	*20*
		Is complete and very detailed with some spelling/grammar errors	*25*
		Is complete and very detailed with no spelling/grammar errors	**30**
	Indicates the impacts of the project on members of the community	*No impacts are identified*	*0*
		Impacts are identified but some are missing	*10*
		Impacts are identified but lack some detail	*20*
		All impacts are identified and very detailed with some spelling grammar errors	*25*
		All impacts are identified and very detailed with no spelling/grammar errors	**30**
	Provides clear explanation of benefit to the community	*The benefit to the community is not clear*	**5**
		Benefit to the community is somewhat clear	*15*
		Benefit to the community is clear with some spelling/grammar errors	*20*
		Benefit to the community is made very clear with no spelling/grammar errors	**30**

Evaluated part	Judging Criteria	Evaluating details	Point
Team Collaboration	Explains how the team was formed	*Does not explain how team was formed*	*0*
		Explains how team was formed but lacks detail	3
		Fully explains how team was formed	5
	Clear description of the responsibilities of each team member	*Includes an assigned role for each team member*	10
		Includes an assigned role for each team member and includes a description of each team member's role	20
	Explains the problems (or lack thereof) faced by the team and how they were overcome (or not)	*Does not answer the question*	*0*
		Lists problems but not how they were solved OR says they faced no problems but does not explain why	5
		List problems and how they solved them but lacks detail OR explains why they worked well together but lacks detail	10
		Explains problems and solutions in detail OR provides detailed explanation as to why they worked well together	15
	Explains how working together was helpful	Does not answer	0
		Advantages to working as a group provided OR how working as individuals would have been more difficult provided	10
		Both are answered	20

Total maximum points :500